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IBM to widen peer-to-peer net portfolio

By Michael Cooney
Senior Editor

RALEIGH, N.C. — IBM will strengthen its peer-to-peer networking foundation next spring with the rollout of software products that ease network configuration and help bring existing equipment into the APPN era.

The new products include an automatic configuration facility for Advanced Peer-to-Peer Networking End Nodes, a software package that lets workstations participate in LU 6.2-based nets while emulating 3270s and an Advanced Program-to-Program Communications file-transfer program.

APPC is IBM's application program interface to underlying LU 6.2 peer-to-peer data transport services. LU 6.2, the key transport protocol in APPN, allows computers to communicate with one another directly without involving the mainframe.

One of the most significant APPC rollouts will be Discovery Architecture software, code IBM will implement in its OS/2, NS-DOS, OS/400 and AIX operat-

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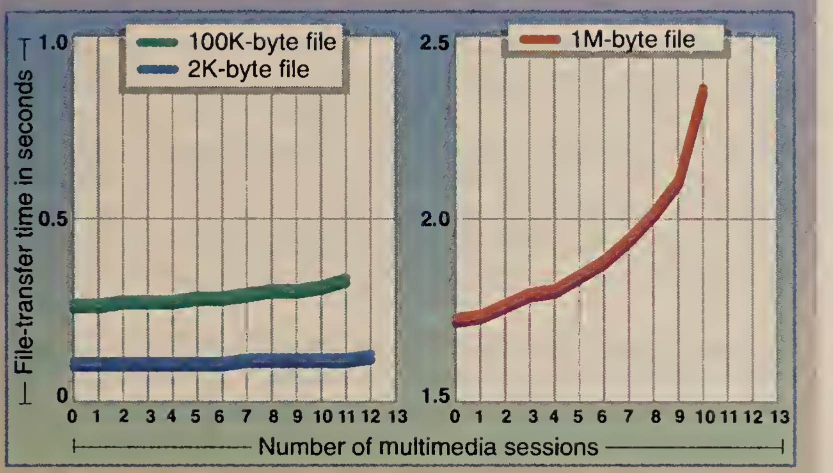
IBM enhances 16M LAN for multimedia



Figures show the effect of multimedia sessions on server-to-client file-transfer times. The 16M bit/sec Token-Ring test network supported 13 Personal System/2 clients and 3 OS/2 servers – 2 for multimedia traffic and 1 for data – outfitted with new Busmaster Token-Ring adapters.

GRAPHIC BY SUSAN J. CHAMPENEY

SOURCE: IBM, RESEARCH TRIANGLE PARK, N.C.

IBM girds token ring for multimedia applications

By Joanne Cummings
Senior Writer

WHITE PLAINS, N.Y. — IBM is planning to announce software and a 32-bit token-ring adapter that will enable 16M bit/sec Token-Ring local-area networks to support multimedia applications more efficiently.

The products, detailed in an internal white paper, will add to the company's growing arsenal of multimedia wares and flesh out its plans for distributed multimedia support ("Multimedia storm to sweep over Las Vegas," *NW*, Nov. 16).

According to an IBM spokesman, the products will be announced shortly and will be generally available sometime in the first half of next year.

The white paper said IBM is working on software that will run under LAN Server 3.0 and enable a 16M bit/sec Token-Ring LAN to accommodate a set number of multimedia sessions along with traditional data.

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Info Builders expands data access horizons

Enhanced EDA/SQL gives CICS, NetWare users entree to new databases; firm widens ties to DEC.

By Wayne Eckerson
Senior Editor

CHICAGO — Information Builders, Inc. (IBI) this week is expected to announce a new version of its database access software that will give Novell, Inc. NetWare and IBM CICS users access to more than 50 databases.

In addition, IBI is expected to announce that its Enterprise Data Access (EDA)/SQL tool will run on five new Unix platforms and work with Digital Equipment Corp.'s Accessworks database access software to extend the reach of that product. IBI will also unveil a routing feature that will enable Unix and DEC VAX EDA/SQL servers to function as hubs for distributing SQL data requests throughout a network.

The announcements will be made Wednesday at Digital Consulting, Inc.'s Database World & Client/Server World Conference and Exposition here.

EDA/SQL is connectivity software that provides SQL access to more than 50 relational and nonrelational data sources.

IBI is scheduled to team up with Novell to announce EDA/SQL products that run on NetWare servers. Since more than 60% of all local-area network

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- **Innovator Jeff Case uses down-home style to push SNMP ideas. Page 79.**

AT&T opens SS7 net for 800 routing

By Bob Wallace
Senior Editor

BASKING RIDGE, N.J. — AT&T will offer an advanced 800 feature beginning Dec. 31 that lets users tap into its Signaling System 7 (SS7) network to reroute inbound calls in less than a second.

The feature, dubbed 800 Service Intelligent Call Processing (ICP), is an improvement over the carrier's current advanced 800-routing options, which require users to implement preset routing plans in the AT&T net. Those options take several minutes to invoke and are not as flexible in handling unforeseen calling spikes.

With ICP, a computer at the customer's site uses a direct link to AT&T's SS7 net to instruct

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PC price war isn't all good news for network vendors

By Bob Brown
Senior Editor

Network product suppliers have had good reason to be bullish in the personal computer price war, given that users are hooking most of their new low-cost PCs into networks.

But the war may wind up costing net vendors in the long run.

As PC prices plummet, the costs of associated network products, such as local-area network adapter cards and PC-to-mainframe gateways, are looking high in comparison. It seems likely that vendors will have to trim prices and profit margins due to pressure from customers.

"There are good and bad things for network vendors in the PC price war," said Todd Dagres, director of data communications research at The Yankee Group, a market research firm in Boston.

"Lower prices are making it more attractive for users to downsize from mainframes to client/server PC networks," he said. "On the other hand, users are asking why a network connection is now a bigger percentage of the cost of a workstation than it used to be, which will result in price pressure on the vendors."

Mike Nunnelly, network specialist at Deaconess Hospital in Evansville, Ind., said costs for adapters and other PC peripherals should be falling along with PC prices. "The prices should

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3Com to roll out low-end, SNA-ready Ethernet hub

Effort with Sync Research expected to produce token-ring hub with SDLC conversion capabilities.

By Skip MacAskill
Staff Writer

SANTA CLARA, Calif. — 3Com Corp. this week is expected to roll out a low-end Ethernet hub for remote offices and work group environments that will offer integrated routing functionality.

The hub, dubbed Boundary Node, will play a role in 3Com's Systems Network Architecture strategy by providing Synchronous Data Link Control traffic conversion in a future release, which will likely include support for token ring, according to sources close to the company.

Boundary Node is a standalone, six-port 10Base-T hub that will offer the capabilities of 3Com's NetBuilder multiprotocol Ethernet bridge/router line. It is expected that several Boundary Node hubs could be stacked together, with one integrated routing board providing routing functionality for the entire stack.

The integrated routing will support various network protocols, including Transmission Control Protocol/Internet Protocol, Digital Equipment Corp. DECnet Phase IV, Novell, Inc. Internetwork Packet Exchange (IPX), Xerox Corp. Xerox Net-

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Systems Strategies helps IBM fulfill blueprint plan

Companies join to improve distributed processing.

By Wayne Eckerson
Senior Editor

WHITE PLAINS, N.Y. — IBM will flesh out a critical component of its Network Blueprint this week when it announces a relationship with Systems Strategies, Inc. to develop and market message queuing technology for building distributed applications.

According to sources close to both companies, IBM Networking Systems and Systems Strategies will share technologies and work together to build products based on IBM's Message Queue Interface (MQI), an application program interface IBM announced in September.

MQI supports asynchronous messaging between applications on multivendor platforms and networks. Applications written to MQI log messages in recoverable queues before sending them to target applications.

MQI shields developers from the complexity of building distributed applications that run in heterogeneous net and computing environments. It also guarantees data delivery and improves processing performance in complex distributed applications.

Sources said no date had yet

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Firms team up for trial to prove viability of FDDI nets

By Maureen Molloy
Senior Writer

SEA GIRT, N.J. — Some of the biggest Fiber Distributed Data Interface vendors want to prove FDDI isn't a threatened species.

With Asynchronous Transfer Mode (ATM) stealing FDDI's thunder of late, the suppliers plan to work over the next few months with InterLAB, a network testing and consulting firm based here, to provide tangible evidence of the benefits of FDDI.

In its testing facilities here, InterLAB will build and operate a 100M bit/sec FDDI internet that will simulate a Fortune 500 corporate network.

According to InterLAB President Kevin Tolly, the goal of the two-month FDDI Fortune 500 Technology Trial is to provide data on such things as performance, management, translation and encapsulation, installation, and net monitoring and analysis.

Participants are also hoping the trial will jump-start the stalled FDDI industry.

Vendors that have already committed FDDI products to the project include Ascom Timeplex, Inc., Digital Equipment Corp., Fibernet Research, Inc., Hewlett-

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Briefs

End of an era. The last vestige of the original National Science Foundation Network (NSFNET) backbone was dismantled last week when the last T-1 router was removed. The backbone was built under a contract awarded to Merit, Inc. in 1987. Merit, as a partner in Advanced Network & Services, Inc. with MCI Communications, Inc. and IBM Corp. continues to provide T-3 services to the Internet over the national ANS T-3 backbone.

Two-way street? Illinois Bell Telephone Co. last week announced that it will spend $3 billion over the next five years to modernize its network if Illinois regulators loosen regulations. The carrier wants to cap residential rates until 1997, create a formula that ensures that overall price increases will be less than the inflation rate and let the market set prices for services in instances where it competes with other carriers. It also wants its ceiling on earnings removed. The carrier is awaiting a decision from the Illinois Commerce Commission.

Advantis goes live. The IBM and Sears Roebuck and Co. value-added network company, Advantis, officially began business operations Dec. 1. The company will handle all internal networking needs for IBM and Sears, while serving more than 10,000 customers with collectively more than one million end users worldwide. The company last week added to those figures by announcing that farm and industrial equipment manufacturer Ford New Holland of New Holland, Pa., signed a multimillion dollar deal to have Advantis design and manage its voice and data net.

Shopping for a hub at Wal-Mart. SynOptics Communications, Inc. last week announced it will provide Ethernet and token-ring hubs for more than 2,000 Wal-Mart Stores, Inc. locations in 45 states, Puerto Rico and Mexico. Installation of SynOptics' LattisHub 10Base-T stackable work group hubs and LattisNet Series 2700 token-ring hubs is under way in 1,833 Wal-Marts, 286 Sam's Club warehouse outlets and 21 SuperCenter distribution centers. The installation is expected to be complete by March 1993. The contract's value was not disclosed.

Centel-Sprint merger looking good. John Frazee, chairman and chief executive officer of Centel Corp., last week said a preliminary vote count showed that Centel shareholders approved the merger of Centel and Sprint Corp, despite a major proxy challenge by several large shareholders. Sprint shareholders approved the merger last week, and official results of the Centel shareholder vote are expected this week. The deal is expected to be completed early next year.

FDDI over UTP spec nears completion. The proposed standard for running Fiber Distributed Data Interface over unshielded twisted-pair wiring is expected to be finalized at an ANSI meeting in San Diego this week, according to Jim Vogt, product manager at SynOptics Communications, Inc. Products based on the emerging standard are under development by a number of vendors, with some rollouts expected by the first half of next year.

Massachusetts looks for new net. The Commonwealth of Massachusetts on Dec. 14 will issue a request for proposal for a statewide T-1 network and network management services to be used by state agencies and departments. The network will support voice, data, video and image traffic. Responses are due in by Feb. 1.

CONTACTS

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AT&T, Lawrence Livermore to link 1G LANs with ATM

Will team to develop gateway for emerging ANSI Fiber Channel standard to 622M ATM services.

By Jim Duffy
Senior Editor

LIVERMORE, Calif. — AT&T and the Lawrence Livermore National Laboratory last week disclosed a joint research project aimed at linking geographically dispersed scientific networks over an Asynchronous Transfer Mode (ATM) wide-area network.

Under the three-year project, AT&T and Lawrence Livermore are looking to develop a gateway that will connect 1G bit/sec Fiber Channel local-area networks at laboratory sites to ATM services running at up to 622M bit/sec. Fiber Channel is an emerging ANSI standard for high-speed point-to-point connections using fiber-optic media.

The project will attempt to establish a high-speed LAN internetwork for scientific visualization, which is graphical and full-motion depictions of physical phenomena. Current LAN technologies, such as Ethernet and Fiber Distributed Data Interface, are too limited to accommodate such a bandwidth-intensive application, said Paul Rupert, manager of the Advanced Telecommunications Program at Lawrence Livermore.

Wide-area services such as 1.5M bit/sec T-1 offerings also represent a network bottleneck.

"You can't really do meaningful visualization on Ethernet rates, for sure, and at FDDI, it's questionable," Rupert said. "That's why we embarked on the local-area network activity, building it with this Fiber Channel standard to go at gigabit rates. Then what we want to do is tie it to collaborators across the country instead of just across the site."

AT&T is contributing experimental ATM switches and Synchronous Optical Network (SONET) transmission gear, as well as cell-based switching services via its Experimental University Network (XUNet). XUNet currently links nine research centers.

Lawrence Livermore is contributing Fiber Channel networking insight. The lab is currently running a prototype Fiber Channel network at 255M bit/sec using an Ancor Communications, Inc. switch and adapters manufactured by Honeywell, Inc. and codeveloped by IBM and Hewlett-Packard Co., according to Rupert.

> The project will attempt to establish a LAN internetwork for scientific visualization.
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At the culmination of the project, AT&T may market the gateway commercially or license the technology to third parties, Rupert said. AT&T said the project presages a commercially available ATM service. ◘

USL pares down price of OSI source code for Unix

OSI Kick Start program intended to fuel market.

By Ellen Messmer
Senior Correspondent

WASHINGTON, D.C. — Unix System Laboratories, Inc. (USL) last week slashed its price on Open Systems Interconnection source code for Unix System V in an effort to stimulate the OSI market.

At the Fed Unix show here, USL launched the OSI Kick Start program, reducing its Unix System V OSI source code fees from $80,000 to $10,000 and reducing royalty fees by 75% for those Unix System V licensees as a way to encourage the development of OSI applications and bring the cost of OSI end-user products in line with those for Transmission Control Protocol/Internet Protocol.

Computer vendors applauded the announcement, saying USL's bargain basement pricing gives them the opportunity to bundle OSI code with their operating systems, as is often done with TCP/IP today.

Users interested in OSI often complain that vendors throw in TCP/IP for free or at low cost but charge thousands of dollars for OSI. This lopsided pricing can make it difficult to cost-justify the migration to OSI.

In response, USL has dramatically cut the cost of its Open Networking Platform OSI products — which include upper layer services, wide-area network transport and the X/Open Associated Control Service Element for the presentation layer — to stimulate the growth of OSI networks in the Unix market.

> "Users often complain that vendors charge thousands of dollars for OSI."
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"We are looking at the OSI market, and we realize that something has to happen to help it take off," said Richard Bevis, group product marketing manager for open solutions software at USL, which counts most of the major systems vendors as clients. "Lowering our fees allows our customers to price their binary products at a level competitive with TCP/IP products."

Gwen Apfel, program manager for communications products at Pyramid Technology Corp. in San Jose, Calif., said, "This is going to be useful for expanding the OSI market. It would likely encourage us to bundle OSI with the operating system." Making OSI available for free or at a low price would encourage users to experiment with OSI, which many say they want to do, she added.

Pyramid currently prices the OSI code for its computers at two to three times the price for TCP/IP.

The USL announcement promises to stimulate the independent software vendor community's interest in OSI, Apfel said, but she cautioned that development dollars are tight and developers will still have to make decisions based on their expected return on investment. However, the ever-growing number of federal government requests for proposal requiring OSI products is a definite factor, she said.

Richard Rogoff, regional sales manager at Interactive Systems Corp., a New York-based supplier of TCP/IP and OSI source code, said USL's price-cutting may help the OSI market where it seems to be weak — the commercial sector in the U.S. "OSI is today driven by the international market and the federal market," Rogoff said. "The commercial market is where it needs to expand." ◘

AT&T unveils fractional T-1 speeds, DDS objectives

By Bob Wallace
Senior Editor

BASKING RIDGE, N.J. — AT&T last week announced a series of new speeds for its fractional T-1 service along with route diversity and performance objectives that apply to all its digital data services.

The new speeds for AT&T's fractional T-1 Accunet Spectrum of Digital Services (ASDS) were scheduled to become available today, pending Federal Communications Commission approval. They are 192K, 320K, 448K, 576K, 640K and 704K bit/sec.

ASDS was first offered in May 1989 at speeds of 9.6K, 56K/64K, 128K, 256K, 384K, 512K and 768K bit/sec. It was targeted at users that needed more than 56/64K bit/sec links but couldn't justify a T-1 line.

"Adding these new intermediate bit rates fits into our strategy of offering users the widest possible array of data network services," said Joe Lueckenhoff, a division manager with AT&T's ASDS product management group. "And we're trying to do this while ensuring the highest quality of service."

AT&T charges users fixed monthly and per-mile rates and levies additional charges based on options such as action connection and route diversity (see chart, this page).

The carrier set pricing for two forms of diversity. Basic Diversity gives users two geographically separate routes for their ASDS traffic, one of which is used for backup. With Custom Diversity, AT&T can route users' traffic over any of three separate network routes.

Pricing for the diversity options varies according to bit rate. For example, a user with a 192K bit/sec link would pay a $97 monthly rate for Basic Diversity or $132 for Custom Diversity, while a user with a 704K bit/sec link would pay $291 per month for Basic Diversity or $343 monthly for Custom Diversity.

AT&T also announced it will publish performance-quality and service availability objectives for the new ASDS speeds, ASDS at 9.6K bit/sec and 56K/64K bit/sec, and Dataphone Digital Service (DDS) — a digital data service that supports speeds from 2.4K to 56K bit/sec.

Pricing for new AT&T fractional T-1 bit rates

Accunet Spectrum of Digital Services at selected speeds

Proposed IOC rates

Speed (bit/sec)	Fixed monthly charge	Per-mile charge
192K	$720	$0.83
320K	$1,130	$1.31
448K	$1,485	$1.73
576K	$1,785	$2.09
640K	$1,915	$2.25
704K	$2,030	$2.39

Proposed access connection rates

	Per-channel charge	
Speed (bit/sec)	Monthly charge	Installation charge
192K	$33	$527
320K	$40	$527
448K	$45	$527
576K	$48	$527
640K	$49	$527
704K	$50	$527

Proposed diversity rates

Speed (bit/sec)	Monthly charges (per IOC)
192K	$97
320K	$153
448K	$202
576K	$246
640K	$268
704K	$291

Proposed custom diversity rates

Speed (bit/sec)	Monthly charges (per IOC)
192K	$132
320K	$185
448K	$238
576K	$291
640K	$317
704K	$343

IOC = Interoffice channel

SOURCE: AT&T, BASKING RIDGE, N.J.

Performance-quality objectives refer to the percentage of

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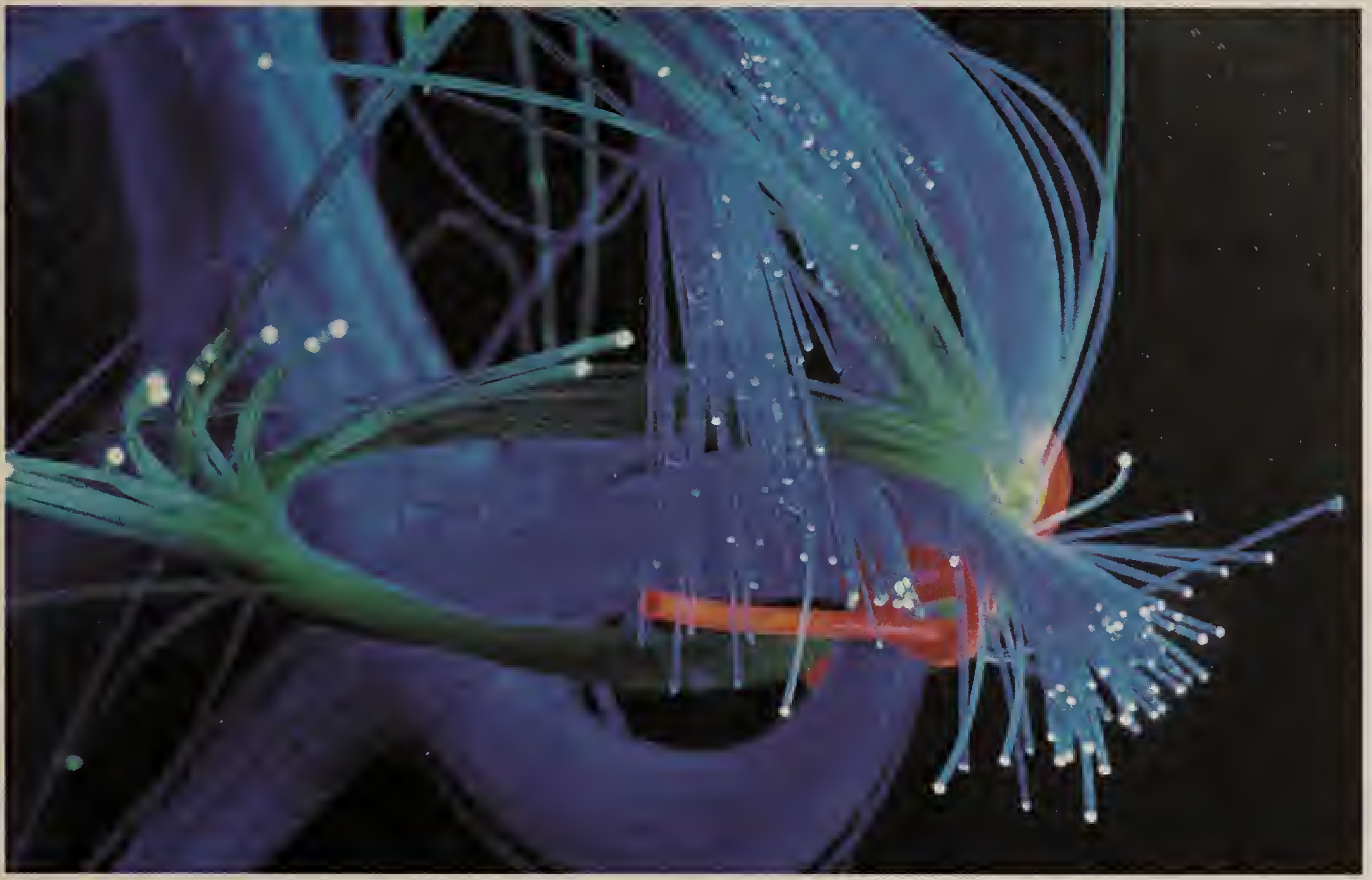

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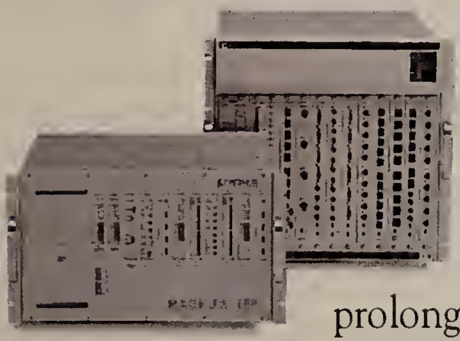

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BT to offer Tymnet services in Pac Rim, Latin America

Will also cut price of U.S. frame relay up to 50%.

By Bob Wallace
Senior Editor

SAN JOSE, Calif. — BT this week will announce it is slashing the price of its public frame relay service and extending its Tymnet network into 17 new Pacific Rim and Latin American countries.

BT will cut the price of its ExpressLane frame relay service by as much as 50% in the U.S. The firm will also commit to using StrataCom, Inc.'s IPX switch instead of its own Tymnet packet engine, a move that will eventually enable BT to offer users a common set of service features across its net.

Jeff Steinberg

The carrier is also expected to announce a delay in availability of frame relay switched virtual circuit support, which was originally due out this month.

On the X.25 front, BT will lay out plans to offer fully managed end-to-end X.25 and Systems Network Architecture net services, as well as electronic mail and electronic data interchange applications, to nine Pacific Rim and eight Latin American countries by year-end 1993.

Users in the 17 countries can — or will be able to — access the Tymnet Global Network through dedicated and dial-up links at up to 9.6K bit/sec speed. Once linked to Tymnet, users will be able to connect to computer systems worldwide, said Jeff Steinberg, global network services product manager for BT.

The managed data services are available now in Korea and the Philippines and will be available in India, Indonesia, Malaysia, Oman, South Africa, Taiwan and Thailand next year. BT already offers Global Network Services in Australia, Hong Kong, Japan, New Zealand and Singapore.

In Latin America, BT is currently offering managed data services in Mexico and Puerto Rico, and services will be available to users in Argentina, Brazil, Chile, Colombia, Panama and Venezuela by year-end 1993.

Users can select among flat-rate traffic options, from $735 monthly for transmitting up to 10M bytes of data during the month to $3,500 for unlimited usage. Usage-based options cost from 9 to 15 cents per 1,000 characters, depending on the country. X.25 net connections — including X.25 port software — cost between $580 and $1,500, depending on the country.

The Pacific Rim and Latin America represent more than 61% of the global network expansion planned by multinational companies, according to a new study by The Yankee Group, a Boston consultancy.

The Yankee Group surveyed 68 U.S.-based multinational companies with public, private or hybrid international networks. Roughly 35% of overseas network expansion is expected to occur in the Asia/Pacific Rim region during the next two years, while 26% is expected to take place in Latin America.

X/Open users create 1993 open systems wish list

By Ellen Messmer
Senior Correspondent

WASHINGTON, D.C. — More than 200 corporate and government representatives from around the globe gathered at the X/Open users conference here last week to formulate user priorities in open systems for the coming year.

Among the three dozen requirements users identified during the conference, called the Xtra World Congress, was the need to develop application program interfaces (API) for transaction processing, database management systems and security applications, including encryption and authentication.

Although the results of a secret ballot for a final top six priorities will not be known until February, it is likely these items will be on X/Open's list of technical must-do's for 1993.

APIs are just one part of the work of X/Open, a consortium of computer vendors developing the Common Applications Environment (CAE) specification by meshing de facto and de jure standards to make it possible to port applications across systems from different vendors.

X/Open also sets definitions for a portable operating system, the latest being the XPG4 specification.

A number of products from Digital Equipment Corp., International Computers, Ltd., NCR Corp., Sun Microsystems, Inc., Siemens Nixdorf Information Systems, Inc. and Ing. C. Olivetti & Co., S.p.A. have passed X/Open's tests and been branded for XPG4 compliance.

Attendee's at last week's X/Open user conference included Amoco Corp., The Boeing Co., Credit Lyonnais, the U.S. Department of Defense, E.I. du Pont de Nemours & Co., Electronic Data Systems Corp. (EDS), Eastman Kodak Co., the SWIFT bank network organization and dozens of other global firms working to further open systems.

After gathering into six working groups to focus on topics ranging from transaction processing to desktop management, attendees nominated a spokesperson from each group to present a list of user requirements.

Mike Housewright, the spokesman for the transaction processing group and consultant for EDS, said the participants in his group wanted X/Open to promote a common transaction processing API so that products based on the new standard would work with CAE-compliant platforms.

In the security requirements group, Dante Marzetta, deputy director of the Defense Information Systems Agency information processing directorate, said X/Open should develop APIs for data encryption, key management, trusted distribution of software and digital signatures. "We need to be able to pass data in a standard way," he said.

Rich Chang, manager of technical services at Andersen Consulting, argued for APIs for databases.

"There's a need for common APIs into monitoring tools," he said. "We need a central syntax to get into the repository. We want to see APIs into the store procedures and event alerters."

X/Open has already achieved considerable success in fashioning APIs. In conjunction with the X.400 API Association, X/Open developed the Message Store API as well as an API for directory services including X.500.

UI releases Distributed Manager source code, APIs

By Ellen Messmer
Senior Correspondent

PARSIPPANY, N.J. — Unix International, Inc. (UI) last week delivered on last year's promise to release source code that will help vendors deliver interoperable systems management products for distributed computing environments.

The Distributed Manager source code is intended to make Unix System V the key platform for distributed systems management. It not only provides a range of management functions, but will integrate existing management systems on any platform through a set of application program interfaces (API).

Distributed Manager provides a network-based accounting method for licensed software and supports management of print facilities across the enterprise, regardless of computer type. It will allow managers to remotely add users to host computers and handle software installation and distribution, backup and restoral.

The Distributed Manager source code, supplied by UI's subcontractor, Unix Systems Laboratories, Inc. (USL), is now available to UI's 300 industry members and will be offered to nonmembers in the second quarter of next year. Under UI rules,

(continued on page 74)

MFS moves ahead with first commercial ATM net

Links 4 metro areas, to add 9 more next year.

By Bob Wallace
Senior Editor

OAKBROOK TERRACE, Ill. — MFS Datanet, Inc. last week detailed progress it is making in deploying the industry's first commercial Asynchronous Transfer Mode (ATM) wide-area network.

The carrier has installed Newbridge Networks, Inc. 36150 MainStreet ATMNet switches in Chicago, New York, Washington, D.C. and Boston, and linked them using 45M bit/sec T-3 facilities leased from WilTel.

The network will be expanded over the next year to support nine other cities in which MFS Datanet operates fiber-based metropolitan-area networks, enabling the carrier to offer what it is calling High-Speed LAN Interconnection services. It plans to serve northern New Jersey, the 14th metropolitan area, from its New York switch.

"We have come a very long way in a very short time," said Al Fenn, president of MFS Datanet. "And we've stuck to our schedule, which is important to our early

(continued on page 74)

Study says large LAN users vulnerable to net disasters

By Joanne Cummings
Senior Writer

NORTH BERGEN, N.J. — Some of the corporations that have come to rely the most on local-area networks are surprisingly vulnerable to data-destroying disasters, according to a survey released here last week.

The survey, commissioned by Comdisco Disaster Recovery Services, Inc. (CDRS) and based on interviews with 300 randomly selected computer users, found that almost half, or 42%, are vulnerable to disasters that affect LANs.

The survey, designed by New York-based Michaelson & Associates and conducted by ICR Survey Research Group in Media, Pa., established a Vulnerability Index that measured the responding companies' susceptibility to disaster. The index weighed such factors as whether companies had procedures in place to handle off-site data storage, recover critical information, estimate the cost of disruption, and test and evaluate their recovery plan, in addition to other criteria.

According to the findings, corporate data centers, although somewhat vulnerable, fare much better than LANs when disaster strikes. On a scale of zero for least susceptible to 100 for most susceptible, the average data center vulnerability index was 46, while that figure was 75 for the average LAN vulnerability. That

(continued on page 77)

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Network Design & Engineering
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DATA NET ARCHITECTURES

NETWORK ARCHITECTURES, DATA NETWORK EQUIPMENT, STANDARDS AND ENTERPRISE NETWORK MANAGEMENT

Worth Noting

"DECnet Phase IV divides its address space into 63 areas. You simply can't cram the whole world into 63 areas. It's far too small."

Phil DeMar
Network analyst
Fermi National
Accelerator Laboratories
Batavia, Ill.

Data Packets

Thursby Software Systems, Inc. of Arlington, Texas, this week will unwrap software that links Sun Microsystems, Inc. workstations to Digital Equipment Corp. DECnet networks.

The software, called TSSnet for Solaris, allows Sun workstations running the Solaris operating system to participate in DECnet networks as DECnet Phase IV end nodes. It also provides Solaris users with terminal emulation and print services via DEC's Local Area Transport protocol.

Thursby this week will also unveil software that allows Unix workstations to emulate DEC terminals. Dubbed TSSterm, the software allows Unix users in an X Window System environment to emulate DEC VT-320 terminals so they can access data on DEC hosts.

TSSnet for Solaris is priced from $1,295 to $3,995 and is scheduled to ship in the first quarter of 1993. TSSterm is also scheduled to ship in that quarter.

Datability, Inc. of Carlstadt, N.J., last week brought out software that manages terminal servers in a Transmission Control Protocol/Internet Protocol or DECnet network.

The software, called VSM, allows systems administrators

(continued on page 13)

HP expands X.25 packet switch to bolster int'l use

Will accommodate varying interfaces, line speeds.

By Jim Duffy
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. has unveiled a new X.25 packet switch that sports a range of physical interfaces and provides variable packet sizes for X.25 and SNA traffic.

The HP Model 45 plus switch is positioned for international use where physical interfaces, line speeds and line quality vary from country to country, HP said.

The HP Model 45 plus evolved from the HP Model 45, an X.25 switching node and packet assembler/disassembler supporting X.25, Systems Network Architecture/Synchronous Data Link Control and asynchronous protocols.

The product concentrates SNA, asynchronous and X.25 traffic onto a single access line to public X.25 networks.

The HP Model 45 plus connects users to public X.25 carriers such as AT&T, Telenet or BT North America, Inc. in the U.S., and Transpac, PSS DialPlus and Datex-P in Europe.

The new switch is a personal computer-bus chassis supporting five slots for line cards. Each line card has six ports with RS-232, RS-449, V.35 and X.21 interfaces, which support speeds from 9.6K to 1.5M bit/sec, or T-1.

Previously, the HP Model 45 supported four RS-232 ports per card, with speeds topping out at 64K bit/sec for X.25 traffic and 9.6K bit/sec for SNA.

The new interfaces and line speeds will appeal to a broader user base, said Jean-Claude Voillier, HP product manager at the Grenoble Networks Division.

"Whatever country you are in, customers can connect [to] the public services with the right interfaces," Voillier said.

The Model 45 plus also supports larger SNA frames and smaller X.25 packets.

SNA frame sizes are now 4,015 bytes, up from the previous size

(continued on page 13)

Strategic Solutions debuts NetView/PC alternative

By Michael Cooney
Senior Editor

MANCHESTER, Conn. — As an alternative to IBM's NetView/PC, Strategic Solutions International Corp. has introduced a new OS/2-based service point for communicating non-SNA management data to IBM's NetView.

Service Point (SP)/32 is a 32-bit OS/2 Communications Manager application that lets users pass non-Systems Network Architecture alerts to and receive commands from IBM's mainframe-based NetView.

A service point converts non-SNA management data into formats NetView can understand. NetView/PC is IBM's chief all-purpose service point.

"SP/32 is a single integrated command and control package for NetView users who want to bring in non-SNA devices without using NetView/PC," said Nat Mills, vice-president of Strategic Solutions.

The product implements a NetView service point interface on the OS/2 Version 2.0 platform. It works by gathering net management alerts from any downstream non-SNA device that can send data in an asynchronous or ASCII-based format, such as modem managers or multiplexers. It then translates the data into the Network Management Vector Transports format that NetView expects. NetView operators can then issue commands back to the problem device using NetView's run command feature.

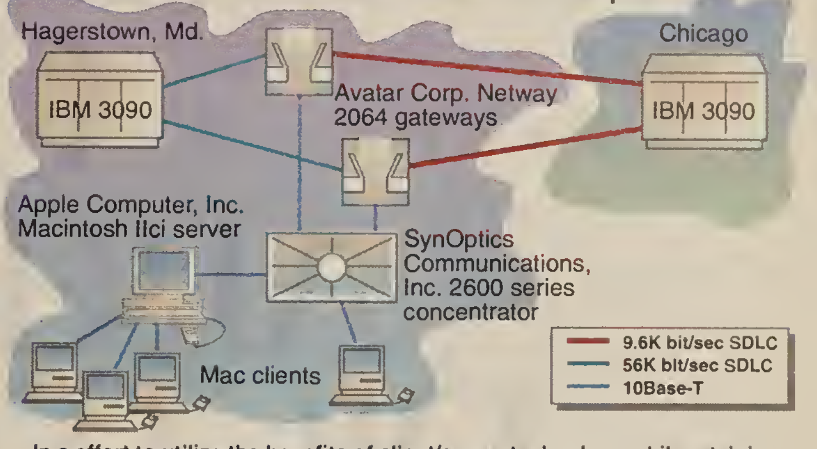
SP/32 also supports the same Restructured Extended Executor Language (REXX) automation programming language as NetView, which means users can write automation applications that run locally on the SP/32 platform or on NetView. A Raima Corp. DB Vista database comes with the program to store those applications.

Using REXX-based automation applications, users could

(continued on page 12)

Macs meet SNA

Card Establishment Services, Inc. (CESI) ties Macs to mainframes in client/server push


Hagerstown, Md.
IBM 3090
Avatar Corp. Netway 2064 gateways
Chicago
IBM 3090
Apple Computer, Inc. Macintosh IIci server
SynOptics Communications, Inc. 2600 series concentrator
Mac clients
9.6K bit/sec SDLC
56K bit/sec SDLC
10Base-T

In a effort to utilize the benefits of client/server technology while retaining ties to its SNA host, CESI recently completed a move from dumb 3270 terminals to Macs.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: RWD TECHNOLOGIES, INC., COLUMBIA, MD.

Firm boosts service with Ethernet LAN

Eliminates 3270 terminals, links Macs to LAN and installs gateways to access mainframe apps.

By Michael Cooney
Senior Editor

HAGERSTOWN, Md. — In an effort to simplify its network operations and improve customer service, Card Establishment Services, Inc. (CESI) has eliminated its 3270 terminals and installed Ethernet-attached Apple Computer, Inc. Macintoshes.

The primary goals for implementing the new net included making the net easier to use, reducing the amount of time its customer service representatives spent on each call and cutting down on training time.

"As we added more services and began handling more merchants and more credit cards, we grew beyond what our 3270s could handle," said Tim Abram, CESI's department manager of customer services.

CESI is a credit card processing clearinghouse for Visa, MasterCard, Diners Club International and American Express purchases. The firm also handles merchant requests for supplies such as sales slips, credit card slips and paper for credit card printers.

In order to achieve its networking goals, the company eliminated its 3270 terminals, coaxial lines and controllers, and instead, installed 48 Macintoshes on an Ethernet local-area network.

The Macintoshes are connected to the local IBM 3090 mainframe via two Avatar Corp. Netway gateways linked to two dedicated 56K bits/sec Synchronous Data Link Control lines (see graphic, this page). The Netway gateway provides the 3270 emulation, enabling the Macintoshes to access 3270 applications on the mainframe.

A key feature of the new environment is a customized graphical user interface (GUI) on the Macintoshes that adds a windowing capability and eliminates the character-based data screens of the 3270 environment.

The GUI was developed by RWD Technologies, Inc., a systems integrator in Columbia, Md., that architected CESI's net. It uses MitemView software and an Apple SuperCard board to allow as many as five 3270 sessions on one Macintosh.

"It got to the point where our customer service reps had to log on to three or four different 3270 applications while dealing with one call," Abram said. "They spent a lot of time gathering information from multiple applications." For example, the mainframe applications include special codes for items such as billing cycles and special services for individual merchants that the customer service representative would have to translate while on the phone, he said.

The new interface formats all necessary information on one

(continued on page 13)

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Timeplex lands $16 million deal with the Fed to install T-3 net

By Jim Duffy
Senior Editor

CHICAGO — The Federal Reserve Bank of Chicago last week said it awarded a $16 million contract to Ascom Timeplex, Inc. to install and support a nationwide T-3 and T-1 network.

The network, called FedNet, will connect Federal Reserve data centers in Dallas, East Rutherford, N.J., and Richmond, Va., using Ascom Timeplex's TX3/SuperHub multiplexers. The data centers, meanwhile, will be connected via T-1 and fractional T-1 lines to Ascom Timeplex LINK+ muxes in each of the 12 Federal Reserve Banks, as well as branches and other office locations.

> FedNet will provide connectivity to institutions within each Federal Reserve District and to the Treasury.
>
> ▲▲▲

In addition, FedNet will provide connectivity to the depository institutions served within each Federal Reserve District and to the U.S. Treasury.

The Ascom Timeplex contract is part of the Federal Reserve's five-year plan to upgrade its funds transfer network ("Federal Reserve upgrading funds transfer system," *NW*, Oct. 8, 1990).

Under the terms of the agreement, Ascom Timeplex will oversee various aspects of implementing the FedNet backbone. The vendor will design, stage and install the backbone network, which includes more than 100 Ascom Timeplex LINK+ Systems and TX3/SuperHub T-3 Systems, as well as other vendors' equipment, such as modems and data service units/channel service units.

FedNet will carry more than $1.25 trillion in transactions per day. Such transactions include check processing, wire transfer of funds and securities, and automated clearinghouse services for the depository institutions.

FedNet will be managed by the Network Management Control Center based at the Federal Reserve Bank of Chicago. The control center will deploy Ascom Timeplex's Time/View network management system to monitor and control Ascom Timeplex muxes as well as third-party network access, transmission and switching gear via the Simple Network Management Protocol.

Any next-generation Ascom Timeplex product added to FedNet will be managed using Hewlett-Packard Co.'s OpenView network management system, Ascom Timeplex said ("Mux maker reveals new product plan," *NW*, Sept. 7).

Installation will begin immediately and is scheduled for completion by early 1994. ◘

Alternative to NetView/PC debuts

continued from page 9

have the SP/32 platform kick off an automatic restart of a failing device. Or that same application could reside on NetView and automatically restart the device via the SP/32 platform.

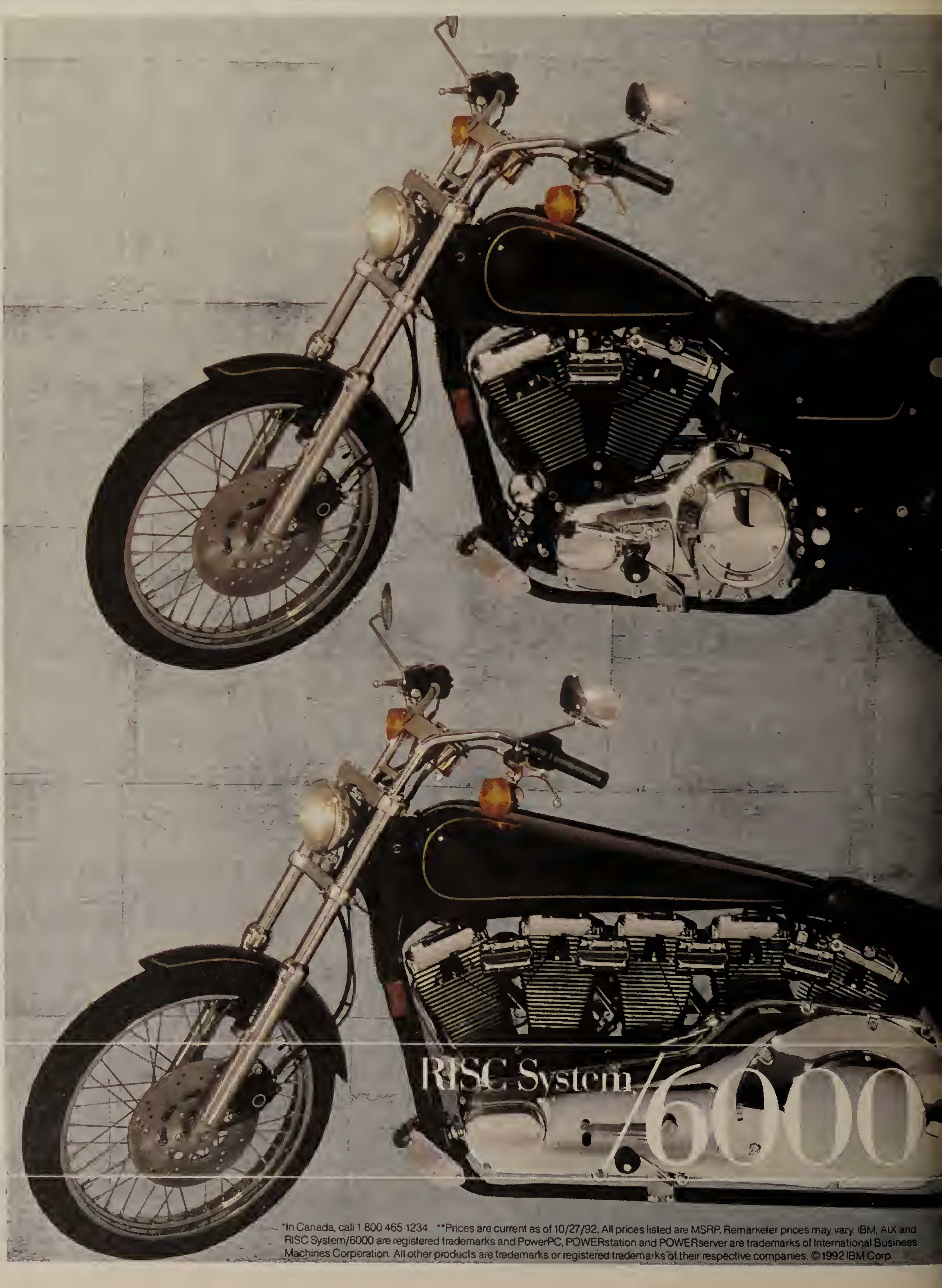
According to Jack Runquist, president of Strategic Solutions, the SP/32's automation tools are what separates the platform from the competition.

"NetView/PC doesn't support REXX," Runquist said. "Since REXX is the same language NetView supports, users can develop and test NetView applications on the SP/32 platform before they implement them on NetView."

Because SP/32 is a 32-bit application, it performs more than twice as fast as 16-bit NetView/PC applications, Mills said. "A command that takes 50 lines of code in NetView/PC, we can do in one line."

SP/32 replaces a less feature-rich 16-bit version of the company's SP product, known as SP/2. The SP/32 platform will be ported to run on IBM's AIX SystemView NetView/6000 in the future.

The base SP/32 platform is available for $3,000. Each non-SNA interface costs an additional $3,000. The company said a 80386/486 PC with 12M bytes of memory is needed to run the product. ◘



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HP expands X.25 packet switch

continued from page 9

of 1,024 bytes. And these frames can now be transmitted at 64K bit/sec instead of the previous rate of 9.6K bit/sec, Voillier said.

The larger frame sizes and higher speeds are aimed at users in countries where telecommunications lines are more reliable and less prone to errors than lines in other countries, Voillier said.

Conversely, the size of X.25 packets has been reduced on the Model 45 plus, from 256K bytes to 1,024 bytes, to decrease the risk of transmission error over low-quality lines and avoid subsequent retransmission of data, Voillier said.

"The quality of lines is so different from one country to another that you have to support high speeds, like T-1 in the United States, while at the same time most of the customers in Europe are running 9.6K bit/sec," Voillier said. "You have to have a product that is very flexible in terms of speed of the lines but also in packet sizes you are providing."

Meanwhile, the Model 45 plus now features throughput of 2.5K packet/sec, as opposed to the previous 625 packet/sec on the Model 45. Packet sizes are 128 bytes. It also supports as many as 2,048 virtual circuits and features a leased-line backup capability.

The Model 45 plus is available now. Prices range from $5,990 for the 18-port configuration to $9,450 for the 30-port version.

A conversion kit costing $4,950 is available, allowing Model 45 customers to upgrade to the Model 45 plus. ◘

Firm boosts service with Ethernet LAN

continued from page 9

screen and translates those cryptic codes into plain English, Abram said.

"The network access time to the mainframe is about the same, but now we are returning three to five screens worth of information, instead of one at a time," he said.

Because all the information is now available on one screen, the average call length has dropped from 250 to 215 seconds, saving the company thousands of dollars in phone bills and increasing employee productivity.

"When you spread those saved seconds out over 2,000 calls a day, it adds up," he said.

Also, with the character-oriented, 3270 interface, it took customer service representatives about 30 days to reach acceptable productivity levels, even after three weeks of training, Abram said. Now users are up to speed just three days after they complete training.

The final aspect of the new net was to eliminate manual order entry when ordering merchant supplies. CESI did that by installing two 9.6K bit/sec lines between the Hagerstown office and the firm's office supply vendor in Chicago, Moore Business Forms.

In the past, CESI took orders from merchants over the phone, wrote them down and sent them to an order entry division, where the orders were keyed in and transmitted via satellite to Moore. The order process took days to complete. That process has been reduced to minutes because orders are now taken directly over the phone and forwarded to the mainframe in Chicago.

The company plans to investigate developing client/server applications now that its initial requirements have been met.

"Now that the network is in place, I have a long list of projects, including developing client/server applications," Abram said. "What we've implemented is easily adaptable to change." ◘

Data Packets

continued from page 9

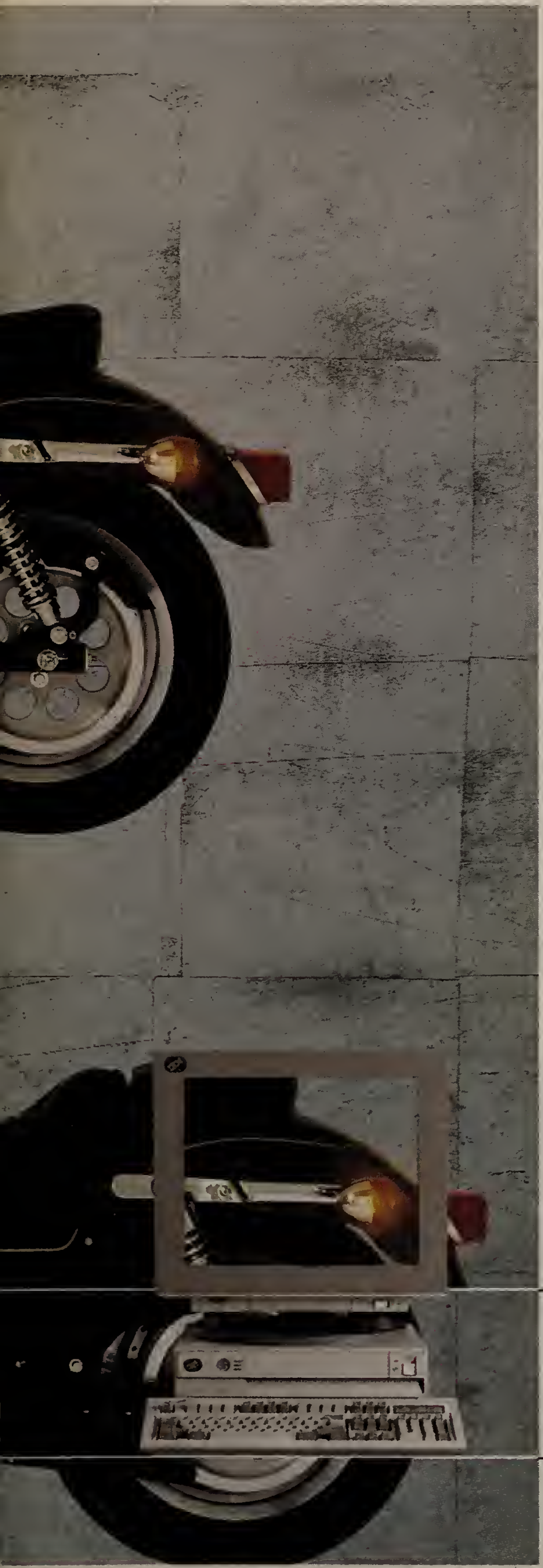
to compile server configurations and store them on a DEC or TCP/IP host where they can be readily accessed or updated. VSM also allows users to customize procedures for managing DEC-compatible or Telnet terminal servers, Datability said.

VSM costs $799 and is available now.

Systems Center, Inc. of Reston, Va., has added automated file-transfer capabilities to its Network Data Mover (NDM) for Application System/400 mid-range computers. NDM for OS/400 Version 2 can now automatically initiate unattended file transfers between AS/400s or AS/400s and MVS mainframes running NDM-MVS.

The new version lets net administrators control the number of file transfers and requests that can be active at any time. The software also provides an audit tool that can track file-transfer statistics.

NDM for OS/400 is available now at a cost of between $1,375 and $20,000, depending on the processor size. ◘



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Worth Noting

"FDDI, fundamentally, is not a scalable technology. It's appropriate as a tactical step, but in the long run, it doesn't take you where you need to go. ATM is sustainable."

Audrey MacLean
Chief executive officer
Adaptive Corp.

Netnotes

Novell, Inc. last week unveiled Version 3.0 of NetWare 3270 LAN Workstation for DOS, the company's IBM 3270 terminal emulation software for DOS workstations. As with previous versions, the new version works in conjunction with Novell's NetWare for SAA, a NetWare-to-IBM host communication product.

One of the primary enhancements is "hot standby" host session support. This means if a primary connection to the host is lost, the workstation will automatically be connected to an alternate server or host, providing for little or no downtime if a host connection is interrupted.

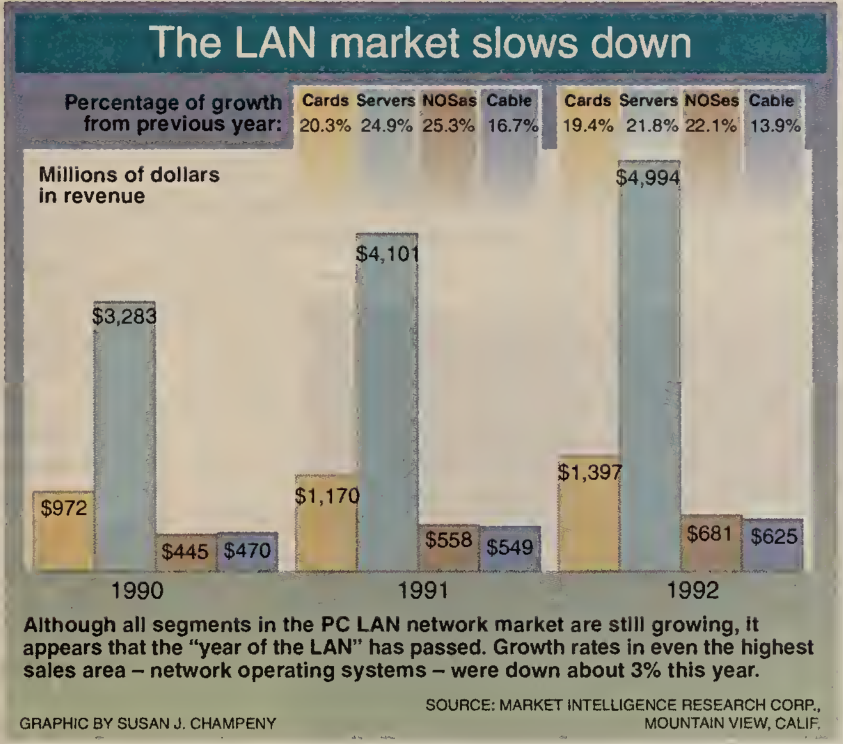
The new version also offers beefed up security by encrypting network passwords between the workstation and NetWare for SAA. This way, if passwords are intercepted, they cannot be read.

NetWare 3270 LAN Workstation for DOS 3.0 is available now for $1,495. Only one copy is required per server, regardless of the number of workstations accessing the software, Novell said.

Triticom last week announced enhancements for both its EtherVision and TokenVision LAN traffic and error-monitoring software.

(continued on page 16)

The LAN market slows down



Although all segments in the PC LAN network market are still growing, it appears that the "year of the LAN" has passed. Growth rates in even the highest sales area – network operating systems – were down about 3% this year.

SOURCE: MARKET INTELLIGENCE RESEARCH CORP., MOUNTAIN VIEW, CALIF.

GRAPHIC BY SUSAN J. CHAMPENY

Webcorp adds Windows, TCP/IP support to peer NOS

DOS, Windows users get equal access to services.

By Caryn Gillooly
Senior Editor

SAUSALITO, Calif. — Webcorp last week brought out a new version of its peer-to-peer network operating system that now provides seamless networking between DOS- and Windows-based personal computers.

Through a new Windows-based interface, this version of the operating system offers DOS and Microsoft Corp. Windows users the same access to network services. With the previous release of the product, Windows users had to exit Windows in order to access certain Webcorp applications and services.

The new version, dubbed Web 4.0, additionally provides support for the Transmission Control Protocol/Internet Protocol and for Novell, Inc.'s Open Data Link Interface (ODI) specification, which means Web can now work with any network interface card (NIC) conforming to the ODI standard.

Windows equality

The primary enhancement for Web 4.0 is the new Windows interface.

"We have taken the electronic mail, security and management facilities [in Web] and redesigned the interface to [conform with] a Windows [graphical user interface]," said Walter Good, president of Webcorp, based here. "Basically, we have modified our whole environment for Windows."

In the previous version, Windows users had to first get to the W drive — a specified drive for Windows users — in order to share files and had to exit Windows in order to access Web applications.

Before this release, users could not access Novell NetWare servers from Windows. But with the new Windows interface, NetWare servers appear as icons on the user's screen, and the user only has to double-click on the server icon to get full access to NetWare services.

> The primary enhancement for Web 4.0 is the new Windows interface.
>
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"We're the only product that provides on-line access to [Novell's NetWare Core Protocols] through Windows," Good said.

TCP/IP, too

Web 4.0 also includes support for TCP/IP connections through the industry-standard Packet

(continued on page 16)

Farallon unites Mac and Windows users

New product lets users set up cross-platform networks without a network operating system.

By Caryn Gillooly
Senior Editor

EMERYVILLE, Calif. — Farallon Computing, Inc. this week is expected to announce enhancements to its Timbuktu product line that let Apple Computer, Inc. Macintosh and Microsoft Corp. Windows users share files and printers.

Farallon currently offers Timbuktu for Macintosh, a product that lets Macintosh users share files and screens with other Macintosh users. With the new Timbuktu for Windows, those Macintosh users can have the same connectivity capabilities with users on Windows-based personal computers.

For Windows users, Farallon currently offers PhoneNet PC, which lets users of DOS-based PCs access files on a Macintosh file server and Apple laser printer.

The new Timbuktu for Windows software includes all existing PhoneNet capabilities, plus it lets PC users access files directly from Macintosh clients and share screens with those clients.

"There are cross-platform solutions available today, but they are server-based," said Steve Holtzman, vice-president of marketing at Farallon, based here. "With a mixed network of Macs and PCs, all the files are dropped into the server. There's no direct communication between the clients."

Even the cross-platform products offered by the peer-to-peer networking vendors such as Arti-

(continued on page 16)

Proteon fills out NIC line with ISA token-ring card

By Skip MacAskill
Staff Writer

WESTBOROUGH, Mass. — Filling the remaining gap in its adapter card line, Proteon, Inc. has rolled out a low-end Industry Standard Architecture (ISA) token-ring network interface card (NIC).

The company also announced new support for The Santa Cruz Operation, Inc. (SCO) Unix drivers across its entire family of ProNet-4/16 adapter cards.

"The new ISA card brings us into the low end of the market and allows us to expand our presence," said Carl Blum, Proteon's senior marketing manager of NICs. "The support for SCO Unix likewise enables us to capitalize on the emerging Unix market."

The new ProNET-4/16 p1391 is an 8-bit ISA NIC that is software-selectable for 4M or 16M bit/sec token-ring environments. It is powered by a Texas Instruments, Inc. TMS 380C-16 two-chip chipset, commonly known as the Falcon and the Eagle chipset.

The p1391, which uses slave direct memory access, offers many of the value-added features found on Proteon's higher end NICs, including flash erasable programmable read-only memory, 128K bit/sec of dynamic random-access memory and the ability to upgrade via software.

"The new NIC, like all our other cards, is 100% software configurable," Blum said. "Once it's in place, the user never has to physically access it to do changes. You simply write a program at the central file server and update all our cards at once."

The p1391 is compatible with IBM Personal Computers, PC XTs and ISA-based workstations. In addition to the new SCO Unix support, it also has drivers for Novell, Inc. NetWare, Microsoft Corp. LAN Manager, IBM LAN Server and Banyan Systems, Inc. VINES. Support for Digital Equipment Corp. Pathworks will follow in the near future, Blum said.

Available now, the p1391 costs $495. SCO Unix drivers for Proteon's complete NIC line are also available now and list for $75.

Farallon unites Mac and Windows users

continued from page 15

soft Corp. require a server on the network, Holtzman said. Farallon's products do not require a server or a network operating system.

Farallon's new products are client-resident software packages — Timbuktu for Macintosh resides on the Macintosh, while Timbuktu for Windows resides on the PC. In addition to the file-sharing capabilities, the products' screen-sharing feature lets users simultaneously view the same screen. This enables users to work together in real time to collaborate on projects, for example.

The feature also lets one user take control of a remote machine. This capability will be most helpful for administrators, Holtzman said, because it will let them help users without physically going to their machines.

Although neither product requires a server, he stressed that the Timbuktu line works with network operating systems that customers may already have in place, such as Novell, Inc.'s NetWare.

Happy customers

Tim Kirk, assistant director of computers at Washington College in Chestertown, Md. — a beta site for the new products — is particularly pleased with the new cross-platform capabilities.

The college has about 17 "zones," or networks, connected to a campuswide fiber-optic Ethernet backbone, Kirk said. Although a vast majority of the systems on campus are Macintoshes, there are about 12 IBM-compatible PCs in use.

"Usually the students who require the greatest amount of support are those using DOS machines, but the DOS machines couldn't be hooked up [to the campus network] before," he said. "Now I can not only bring the DOS people into the network, I can help them more directly" using the remote control capabilities.

Without Timbuktu, Macintosh users can communicate with one another using Apple's AppleShare networking capabilities or System 7, which provides peer-to-peer networking. But, according to Kirk, Farallon's Timbuktu is faster than Apple's alternatives.

"This is the progressive evolution of a product Farallon has had for a long time, and it continues to be stable," Kirk said.

Timbuktu for Windows Version 1.0 and Tumbuktu for Macintosh Version 5.0 are available now for $199 per user. Both are available in 10-, 30- and 100-user packs. With volume pricing, the cost is slashed to as low as $55 per user. ◘

Firm adds support to peer NOS

continued from page 15

Driver Interface specification, giving the product support for PC-based TCP/IP software from third-party companies such as FTP Software, Inc.

And a beta site for the product was looking for just that.

The University of Kentucky's Office of Planning and Assessment needed a peer-to-peer network for letting users share resources locally, but it also needed to let those users access resources on the school's TCP/IP backbone.

"Our users require concurrent access to IBM 3090 mainframes and Unix servers," said Tom Kunselman, senior programming analyst at the University of Kentucky. "With Web, we have simultaneous access to mainframe databases and communications utilities, such as Telnet, [and] we maintain local access to PC applications, files and printers."

Web 4.0 will be available in January for the same licensing price as the previous version — $99 for a single user, $449 for five users, $765 for 10 users, $995 for 15 users and $1,495 for 30 users. ◘

Netnotes

continued from page 15

Triticom, based in Eden Prairie, Minn., has added a new automatic report generation feature that lets administrators create reports for station statistics, station bandwidth, frame distribution and network utilization while the product is running. Previously, the reports could only be created after statistics had been gathered.

A new communicating station display feature shows the administrator which stations are communicating with one another and how much traffic is passing between them. Also added is a broadcast storm-detection feature. The EtherVision product now supports 3Com Corp.'s EtherLink III parallel-tasking adapter and Intel Corp. EtherExpress adapters.

EtherVision Version 2.2 and TokenVision Version 2.2 are available now for $395 and $495, respectively. ◘

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"Whoa!" *Jan, Production*

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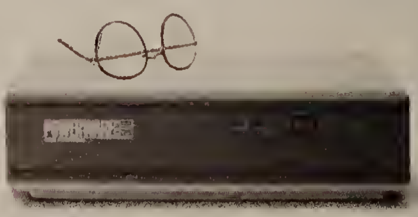

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Link Notes

Bytex Corp. has introduced the Series 7700 Multiplexed Fiber Ring In/Ring Out fiber-optic interface module for its Series 7700 Intelligent Switching hub. The two-port module limits the need for fiber by halving the amount of fiber required to link hubs from four to two strands. That is because the send and receive signals for ring out run on a single piece of fiber.

The module is hot-swappable and can be managed from the vendor's Simple Network Management Protocol-based Network Management System. It costs $5,995 and is available now.

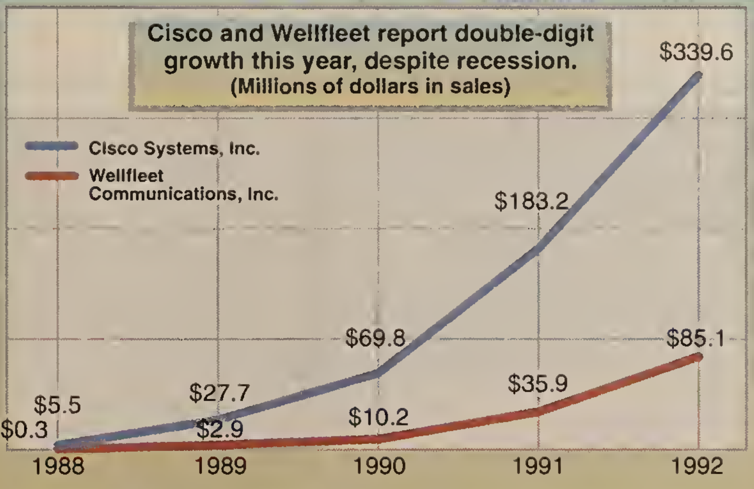
Hughes LAN Systems, Inc. last week added a 10Base2 concentrator module to its Ethernet family of modules for its Enterprise Hub. The new 12-port 312TN occupies a single slot in the hub and provides 12 BNC connections. It offers individual port isolation, internal port termination and an on-board Simple Network Management Protocol agent.

Available now, the 312TN costs $2,895.

In the second quarter of next year, **SynOptics Communications, Inc.** will release the 3800 Multimedia Router hub module for its Lat-

(continued on page 43)

The darlings of Wall Street



Many bridge and router vendors have posted growth rates this year that exceed the success enjoyed by T-1 mux vendors in the 1980s.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: INSIGHT RESEARCH CORP., LIVINGSTON, N.J.

LANNET, others tap into Wellfleet's IN technology

LANNET deal includes two WAN routing modules.

By Skip MacAskill
Staff Writer

HUNTINGTON BEACH, Calif. — Wellfleet Communications, Inc. last week agreed to develop modular versions of its Integrated Node (IN) router for LANNET Data Communications, Inc.'s Multinet LET-36 and LET-10 smart hubs.

This marks the second time in as many months that a hub vendor has teamed with Wellfleet for its IN technology. Bytex Corp. integrated the IN routers into its Series 7700 Switching Hub last month ("Bytex announces routers, ATM strategy for 7700 hub," *NW*, Oct. 26).

> The modules will forward Ethernet traffic at 14,500 packet/sec and token-ring traffic in excess of 10,000 packet/sec.
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A similar deal with Optical Data Systems, Inc. that also involves the IN technology is expected to be announced next week, according to industry sources.

The first products from the LANNET-Wellfleet alliance are expected to be available by the end of the second quarter next year and will include two wide-area network routing modules.

The Integrated Ethernet WAN Router will have two 10Base-T Ethernet ports, and the Integrated Token Ring WAN Router will have one token-ring port.

Both modules will have two synchronous ports that support various WAN interfaces, including frame relay, T-1, Switched Multimegabit Data Service and X.25.

The modules will forward Ethernet traffic at 14,500 packet/sec and token-ring traffic in excess of 10,000 packet/sec.

The module's network protocol support will include the Transmission Control Protocol/Internet Protocol, Digital Equipment Corp. DECnet, Xerox Corp. Xerox Network Systems, Novell, Inc. Internetwork Packet Exchange (IPX) and Apple Computer, Inc. AppleTalk II.

Additionally, both modules will support the Open Shortest Path First, Routing Information Protocol and Open Systems Interconnection's Intermediate System to Intermediate System routing protocol.

Bridging algorithms will also be supported, such as the Spanning Tree Algorithm, Source Routing and Source Routing Transparent.

According to a spokeswoman at LANNET, pricing has yet to be determined for the two routing modules. ◼

Resolving AppleTalk WAN routing woes

Protocol faces deficiencies in large router-based internets; consortium formed to address problems.

By Maureen Molloy
Senior Writer

For many users, trying to run AppleTalk across an enterprise-wide internet is like trying to fit a square peg into a round hole.

Apple Computer, Inc.'s routing protocol has long been criticized for its inordinate use of bandwidth, inefficient path selection and poor congestion management capabilities when routing across wide-area net links.

Mike Bailey, a systems integrator at Lockheed Missiles and Space Company, Inc. in Sunnyvale, Calif., is one such critic. When he began designing an AppleTalk net for the aerospace giant, Bailey was told to isolate the AppleTalk nodes to a single Ethernet segment and keep AppleTalk traffic off the company's multiprotocol backbone for fear it would bog down net performance.

"AppleTalk is the odd man out when it comes to corporate networking," he said. "No one wants to hear about AppleTalk because it causes too many problems and complicates the network." Although the protocol works well in small departmental work groups, Bailey said it breaks down when large numbers of Macintosh work groups are linked together.

But vendors are now taking strides to resolve the nagging issues users encounter with AppleTalk.

For instance, a consortium of vendors whose roster includes Apple, Cisco Systems, Inc., Novell, Inc., 3Com Corp. and Wellfleet Communications, Inc. will begin working this month to make AppleTalk more sturdy ("Consortium to shape fate of AppleTalk," *NW*, Nov. 16).

One of the main deficiencies of AppleTalk today is the Routing Table Maintenance Protocol (RTMP), a transport-layer protocol used to create and maintain

(continued on page 21)

CrossComm feature lets routers handle inventory

By Skip MacAskill
Staff Writer

MARLBOROUGH, Mass. — CrossComm Corp. has added a new inventory feature to its network management software package that enables customers to use the company's ILAN Universal Routers to compile information on remote network devices.

The new capability, dubbed Network Inventory, is possible because of enhancements in Version 5.1 of the company's Internetwork Management Software (IMS) and Version 5.04 of the company's bridge/router software that take advantage of the ILAN's Universal Router Architecture (URA).

With URA, each router can maintain a high-speed Address Processor and Directory database, which is a combination of hardware and firmware that has the ability to store information on as many as 64,000 devices. Net managers can access that information via the software upgrades.

Because the net manager can configure the ILAN router to capture all traffic from the local-area network on which it resides, Network Inventory allows net managers to obtain management information down to the end-node level on any device on any LAN in the corporatewide net by using a centrally located workstation running IMS 5.1.

Once the routers have been loaded with the new software, managers can click on an icon for an ILAN router and find a wide range of information, including the identity of computers added to the LAN or those moved from one LAN to another, as well as media access control address, Network Basic I/O System name, token-ring adapter type and the

(continued on page 21)

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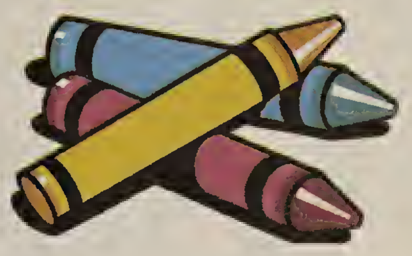

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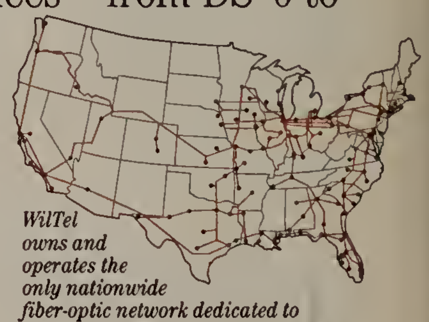

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Resolving AppleTalk WAN routing woes

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routing tables on each router.

With RTMP, routers swap their entire AppleTalk routing databases every 10 seconds, consuming excessive bandwidth and prompting frequent logjams on wide-area links.

Apple has developed a protocol to supplant RTMP, called the Apple Update Routing Protocol (AURP), that will enable routers to route AppleTalk over WANs using Transmission Control Protocol/Internet Protocol encapsulation. The AppleTalk packet is cloaked in a TCP/IP envelope, which is discarded when it reaches the router. The AppleTalk identifier is then used on the AppleTalk net at the other end.

AURP's broadcasts are update-based only, thereby letting two autonomous AppleTalk domains be linked without the excessive overhead associated with RTMP. In addition, the AURP updates occur every 30 seconds instead of RTMP's 10-second interval, further trimming traffic congestion on the WAN.

Since many users are looking to reduce the number of protocols they natively route across the WAN, wrapping AppleTalk in TCP/IP would also help eliminate some of the intensive upkeep associated with a multiprotocol network.

Another specification jointly developed by the internet vendors and now embraced by Apple mirrors AURP in that it also encapsulates AppleTalk in TCP/IP and broadcasts routing table updates less frequently. The so-called Dr. Pepper specification is expected to be available by the end of this month, and implementations could be available as early as the first quarter of 1993. One official said Dr. Pepper will likely be merged into the AURP specification.

Several vendors already sell routers that offer AppleTalk encapsulation. But without a standard, their routers cannot interoperate with each other.

Fixing other faults

While the Dr. Pepper specification, like AURP, targets one key drawback of AppleTalk, the forum will work together to advance AURP because it aims to resolve a broader scope of AppleTalk's shortcomings.

Other AppleTalk issues that still need to be tackled include developing better path selection capabilities, better congestion management at the transport layer in AppleTalk nets and better addressing.

The forum will also investigate the possibility of developing a link state protocol like the Open Shortest Path First (OSPF) or the Intermediate System to Intermediate System (IS-IS) protocols for AppleTalk to provide better distribution of traffic and better reponses to failed links.

AURP and Dr. Pepper are distance vector protocols that not only transmit frequent routing updates, but also select a routing path based solely on the smallest hop count between the source and destination node.

AppleTalk routers based on a link-state protocol such as OSPF or IS-IS, on the other hand, would not send one another entire routing tables, but rather information about which links each router has to adjacent routers.

Once that has been established, only keep-alive messages are sent, along with any routing changes that occur. In other words, updates are made only when the network changes. ◻

CrossComm lets routers do inventory

continued from page 17

type of protocols being used.

Besides allowing users to keep an up-to-date inventory of the LAN, Network Inventory also assists in capacity planning because it provides information on file server loading, line utilization, LAN activity and network topology — essential pieces of information a net manager would need to assess future network requirements.

The feature also enables users to conduct network billing and accounting by collecting and logging net usage information and billing back departments.

"Until now, we couldn't charge back departments for their use of our WAN," said Robert Weiss, a systems engineer at the Kentucky Department of Information Services, who will be using Network Inventory to keep better track of the department's wide-area network. "The new ILAN Inventory feature will solve that problem because it gives us the number of packets sent and received and protocol usage needed for accurate accounting."

Network Inventory will be available in 60 days and comes bundled with ILAN 5.04 and IMS 5.1. Existing users of ILAN 5.04 can obtain a software upgrade to the new feature for $550. IMS 5.1 is priced at $4,995. ◻

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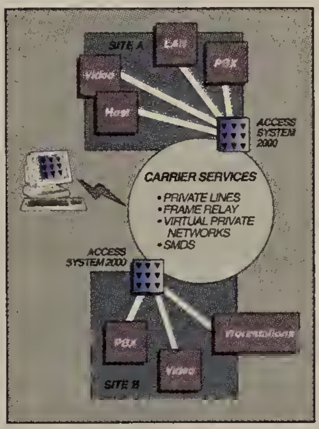

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A network manager at a large New York bank commenting on the firm's use of automatic number identification

Carrier Watch

The **Federal Communications Commission** and **Southwestern Bell Corp.** last week settled a dispute over alleged underpayments the carrier made into a mandatory national fund overseen by the FCC that subsidizes smaller local carriers in high-cost areas. The matter was resolved with the signing of a private settlement known as a consent decree.

Under terms of the consent decree, Southwestern Bell agreed to pay $150,000 into the U.S. Treasury and to correct its accounting reports. In return, the FCC dismissed the dispute without ruling that the regional Bell holding company had violated the agency's accounting rules.

Without the consent decree, Southwestern Bell would have been liable for a $250,000 fine for violating the FCC's accounting rules.

The FCC said the carrier's underpayments resulted from improper reporting by Southwestern Bell of some of its income and expenses. Payments into the fund are based on a carrier's revenue and costs.

The **Federal Communi-**

(continued on page 25)

Fujitsu offers users free National ISDN 1 cartridges

BRI users to receive 'standard' ISDN features.

By Bob Wallace
Senior Editor

RALEIGH, N.C. — Fujitsu Network Switching of America, Inc. (FNS) last week announced general availability of free National ISDN 1-compliant feature cartridges for existing users of its Integrated Services Digital Network digital telephone sets and terminal adapters.

The cartridges let FNS' current ISDN Basic Rate Interface products use the emerging specification to communicate with any central office switch equipped with National ISDN 1 software, which most local exchange carriers have begun to deploy.

Developed by the industry in an effort to promote interoperability, National ISDN 1 specifies a standard method for linking ISDN customer premises equipment with ISDN central office switches and delineates interswitch communications.

To employ FNS' ISDN equipment, users only have to remove the existing feature cartridge and insert the National ISDN 1-compliant cartridge. This enables them to communicate with National ISDN 1-equipped central office switches such as AT&T Network Systems' 5ESS and Northern Telecom, Inc.'s DMS-100 switches.

The National ISDN 1 cartridges work with FNS' high-end SRS-2000 and mid-range SRS-1050 digital telephone sets, as well as its SRS-400 RS-232 and SRS-410 V.35 ISDN terminal adapters.

FNS will offer the cartridges to existing ISDN customers free of charge between Jan. 1 and June 30. After that, the modules will cost about $90 each, according to an FNS spokesman.

The new National ISDN 1 cartridges will be available from FNS distributors, including some regional Bell holding companies' equipment sales subsidiaries.

Firm creating sourcebook for contingency planning

By Bob Wallace
Senior Editor

TURNERSVILLE, N.J. — Paul F. Kirvan & Associates, Inc., an independent consultancy here, is creating an international directory of telecommunications contingency planning companies that will help net managers plan for the worst.

"*The International Directory of TeleContingency Products and Services* will be the first and only [sourcebook] dedicated exclusively to telecommunications contingency planning and disaster recovery," said Paul Kirvan, a principal with the firm.

The directory, which will be available in February, will have separate sections on carriers as well as network hardware and software vendors that offer contingency planning and disaster recovery products and services. The sourcebook will also include a section for firms that run backup sites.

Each section will include a profile of each provider, including the name, address, telephone number and names of main contacts. Kirvan said the directory will have at least one short write-up of one customer from each provider.

"We're adding extras like the customer profiles to make this more than just an ordinary directory with company listings," he said. "And we're giving users top company contacts that can help them, not send them in circles."

The directory will also include a large table that will enable telecommunications managers to see which aspects of contingency planning and disaster recovery are addressed by each vendors' wares, Kirvan noted.

Kirvan has been in the telecommunications field for 25 years. Prior to starting his consulting firm in 1986, he held telecommunications management positions with McGraw-Hill, Inc. in New York and Reliable Insurance Co. in New York. While at Reliable, he participated in a

(continued on page 25)

Legal history of FCC's tariffing rules

1983	FCC lifts tariff filing requirements for nondominant long-distance carriers.
1989	AT&T files complaint with FCC alleging that MCI Communications, Inc.'s nontariffed custom network deals are illegal.
1990	Deadline passes for FCC to rule on AT&T's complaint.
1991	AT&T goes to federal appeals court to force FCC to rule on its complaint.
Jan. 1992	FCC decides MCI is not liable for damages for offering nontariffed deals but delays decision on whether such deals are legal.
Nov. 1992	FCC says its rules allowing nondominant carriers to operate without tariffs is legal. Federal appeals court overturns FCC's tariffing rules, saying they are illegal.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: *NETWORK WORLD*

FCC challenges court on tariffing rules

Asks federal appeals court for review of recent decision making the agency's tariffing rules illegal.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Vowing that it won't give up without a fight, the FCC said it will ask a federal appeals court to reconsider its decision that wiped out the commission's rules allowing nondominant carriers to operate without tariffs.

The Federal Communications Commission has not yet filed a formal request with the U.S. Court of Appeals District of Columbia Circuit, but officials last week said it wants all nine judges on the court to review the decision.

Last month, a three-judge panel overturned the rules that the FCC has used for the past nine years to govern long-distance carriers.

The FCC has until January to file its request, and the appeals court's decision will not become effective until the request for rehearing is granted or rejected. In order to avoid a clash with a court ruling in the interim, the FCC last week said it would hold up the effectiveness of a recent agency ruling that reconfirmed the commission's belief that its tariffing rules are legal.

Since the court's and FCC's orders on the tariffing rules are temporarily put on hold until the legal battles are resolved, carriers have time to gear up for filing tariffs if that becomes necessary.

It will also give users some breathing space while they decide what to do next. Unless the court changes its mind, users are facing legal headaches regarding how to work with carriers on converting nontariffed custom network deals to legally tariffed arrangements.

> Carriers have time to gear up for filing tariffs if that becomes necessary.

▲▲▲

There is an even bigger question concerning what users should do when they are in the midst of negotiating customer network deals.

"If customers do deals with the OCCs, it seems to me that the OCCs must be willing to [ensure] that the deal, as done, complies with all applicable law," and if that requires a tariff, carriers must file one, said James Blaszak, a telecommunications attorney who represents large corporate clients. "Otherwise, I don't really

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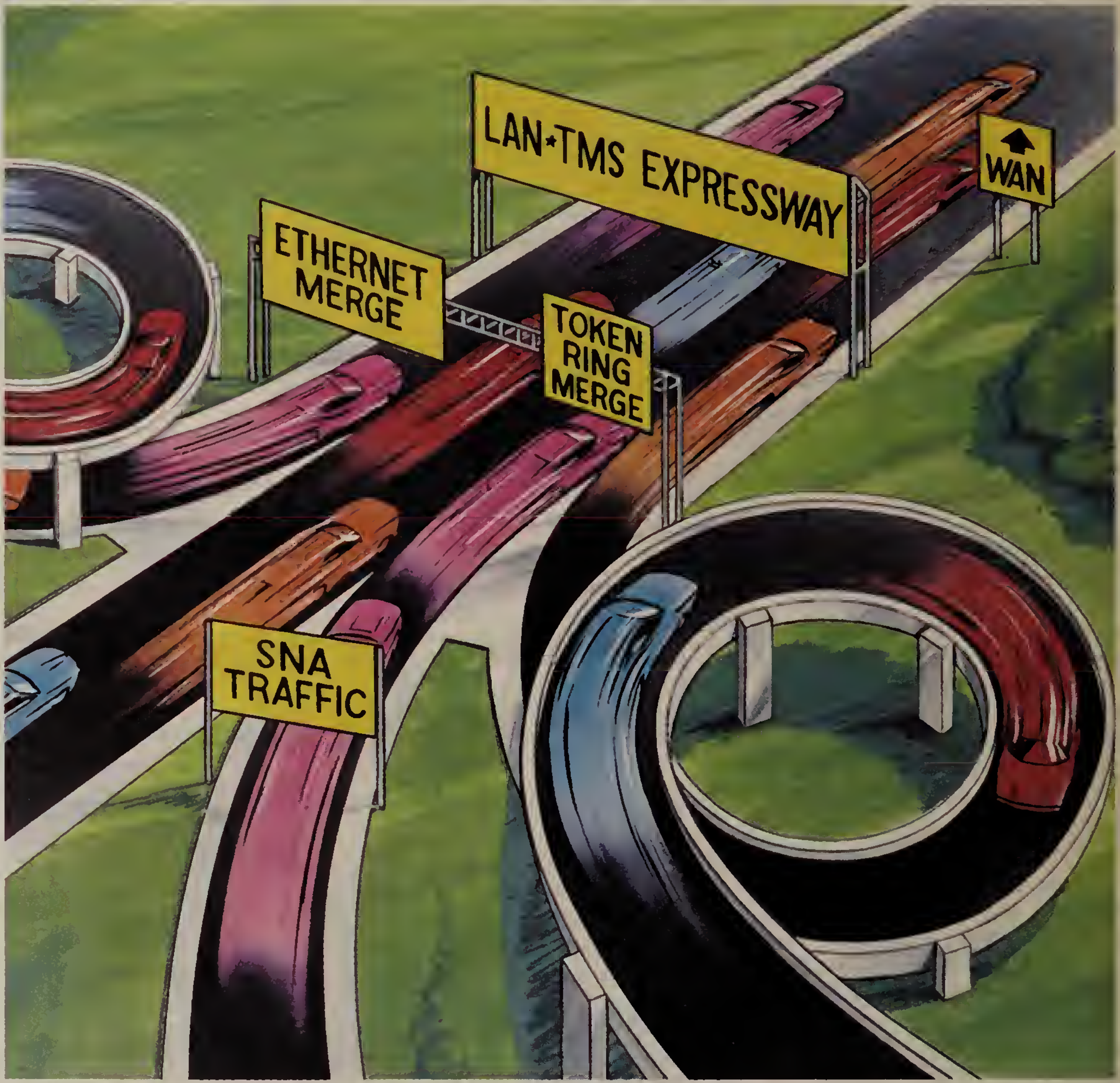
When Routing LAN And Mainframe Traffic, LAN*TMS Runs Rings Around Everything Else.



Internetworking often presents major problems in a Token Ring environment. To date, users have lacked an efficient way to integrate distributed LAN applications with mainframe SNA traffic.

Now LAN∗TMS, a powerful new router from General DataComm, provides the solution. Users report that its unique routing architecture can "route the unroutable," including SNA and IBM LAN protocols such as NetBIOS, without the need to encapsulate them in TCP/IP or other protocols.

So LAN∗TMS doesn't force you to migrate from an SNA to a TCP/IP backbone. Instead, it allows easy travel into an efficient internetworking future.

Much of the system's power and usability come from its unique Address Processor and Directory. This automatically seeks out and learns workstation addresses and other parameters that are vital in routing and network management.

Within seconds of power-up, the LAN∗TMS system determines this key information for each station in the network. When a computer is moved or added, it automatically reflects the change, eliminating endless hours of network support time.

Besides easy installation and usage, GDC's LAN∗TMS offers other advanced capabilities, such as its SPF (shortest path first) link-state routing protocol.

This allows you to take full advantage of a secure mesh network configuration, routing around failed WAN links, failed LANs, or congestion. SPF prevents session timeouts and increases efficiency, selecting paths based on WAN traffic, line usage, error conditions — and priorities set by you, the network manager. LAN∗TMS won't clog WAN links and waste precious bandwidth with unnecessary traffic.

LAN∗TMS also provides support for IBM's LAN Network Manager, for SNMP, and for GDC's Internetworking Management System (IMS), as well as for MEGAVIEW, GDC's most advanced network management system.

And LAN∗TMS is backed up by GDC's extensive worldwide sales and service capability, offering everything from on-site maintenance to disaster recovery.

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FCC challenges court on tariffing rules

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know that customers can preserve the benefit of the bargain struck."

At this point, it is unclear what those tariffs must contain, but it is likely that they will resemble Tariff 12 deals filed by AT&T for custom networks. Those tariffs include numbers of network locations and private lines, rates for switched services, outage credits and annual minimum charges.

Last week, the FCC said it will allow nondominant carriers to file tariffs voluntarily and will not enforce its usual tariff requirements on content and timing during this period.

There are more than 400 long-distance carriers in operation, according to FCC figures, and most of them do not file tariffs. The major carriers such as MCI Communications Corp. and Sprint Corp. voluntarily file tariffs for their standard offerings but not for custom networks or advance data services such as frame relay and Switched Multimegabit Data Service.

Many observers applauded the FCC's decision to seek a rehearing. However, some worry that new tariffs coming in from hundreds of carriers could inundate the FCC, causing delays for users.

Blaszak said he believes the FCC review of voluntary tariffs will be cursory and should probably not cause administrative delays. Instead, he is far more worried about the effect that such disclosures will have on the marketplace.

"If there is public disclosure of all [custom network] deals, there will be less price competition," Blaszak said. The reason for that, he said, is one user will know what a carrier offered another user; therefore, each customer will try to get a better deal.

In this situation, "there is going to be resistance on the part of the carrier giving Customer A as good of a deal as he would have gotten because the carrier knows that Customer B will bargain against Customer A's rates," Blaszak said. This is likely to force carriers to offer near-uniform rates, he said.

MCI was pleased that the FCC asked for a rehearing. "MCI noted when the decision was first reached that there were significant reasons for such a rehearing," said Gary Parsons, senior vice-president for corporate and regulatory affairs at MCI.

AT&T was less enthusiastic. The carrier last week said it was not surprised that the FCC had requested a rehearing but declined further comment.

However, in a previous interview, Joe Nacchio, president of Business Communications Services at AT&T, said he is doubtful that the appeals court will change its mind. "My attorneys tell me that the chance of going back to an appeals court [for a rehearing] when the three-judge panel came out this strongly are very low," he said.

Regulatory Update

continued from page 23

cations Commission last week proposed allowing carriers that operate under price cap regulation to issue reports on new services annually instead of quarterly. Initially, the FCC required quarterly reports to ensure that carriers' rates did not exceed the price cap limits. Users pressed for such checks because they feared that price cap regulation gives carriers too much pricing flexibility and they wanted a way to monitor prices.

The FCC said that since price cap regulation has been in place for some time, annual reports would be less burdensome and would yield the same results. The agency pointed out that new services introduced under price caps build demand over time and that quarterly reports can be somewhat misleading.

Firm creating guide for planning

continued from page 23

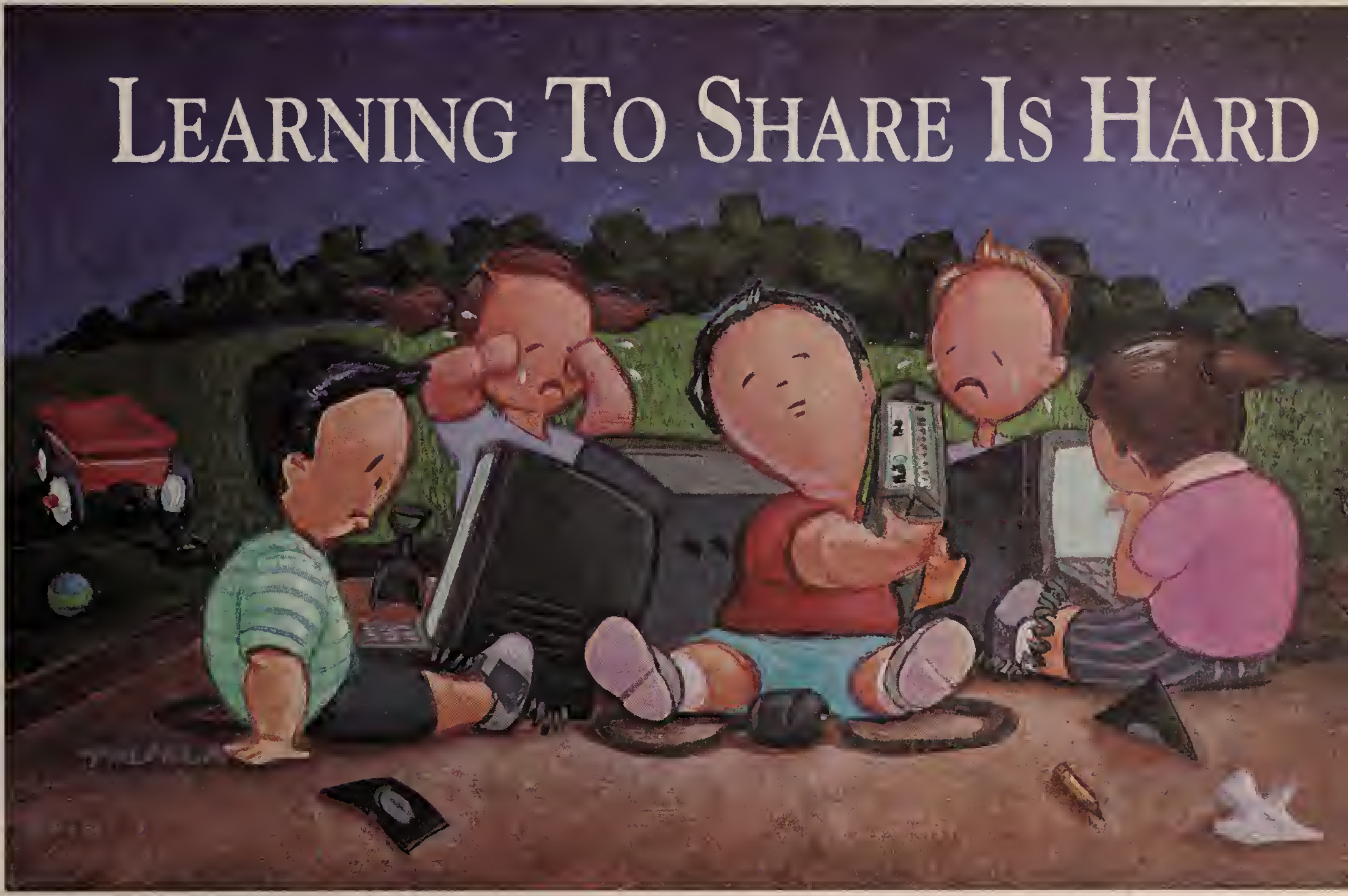
massive recovery effort resulting from a major computer center fire at the firm's headquarters.

Initially offered as a stand-alone product, the directory is scheduled to evolve quickly into a subscription service, with quarterly updates and how-to stories written by Kirvan.

Users will have the option of obtaining the stand-alone edition of their choice (North America or U.K.) for an introductory price of $125 each, or $195 for both, including shipping and handling.

After Jan. 1, the stand-alone price will be $195 for each edition and $345 for both. Subscription service rates have not been set but should be finalized by the end of this month.

For more information, contact Paul F. Kirvan & Associates at (609) 228-7525.



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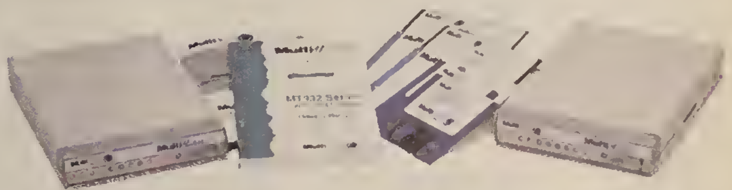

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ENTERPRISE APPLICATIONS

CLIENT/SERVER AND ENABLING SOFTWARE: DISTRIBUTED DATABASE, MESSAGING, GROUPWARE AND IMAGING

Worth Noting

> "Every vendor will come out with a middleware product in the next year, and many of the smaller middleware vendors you see today won't be around for too long."

Sam Somech
Director of research and development
Systems Strategies, Inc.
New York

Store & Forward

Reston, Va.-based **Software AG of North America, Inc.** last week announced that its middleware product, Entire Network, now supports Transmission Control Protocol/Internet Protocol, Novell, Inc.'s Sequenced Packet Exchange (SPX), Network Basic I/O System and LU 6.2 on OS/2. It also supports LU 6.2 on other platforms, Digital Equipment Corp.'s DECnet and several mainframe-based protocols. Priced by node, Entire Network costs between $450 and $59,900.

Futurus Corp. recently announced PhoneBase, a phone message facility that can be used in conjunction with Microsoft Corp.'s Windows for Workgroups. Each time a new caller leaves a message, all pertinent information regarding that caller is saved in the PhoneBase. When that person calls again, a user types the first few letters of the name and PhoneBase displays the caller's information.

PhoneBase is compatible with Borland International, Inc.'s dBase database.

PhoneBase costs $99 for 5-users and will begin shipping in December. For more information, contact Futurus at (404) 392-7979.

Wireless messaging alternatives

Vendors target different geographic segments of the wireless messaging market

Metropolitan service

- **Racotek, Inc.** provides two-way, real-time messaging, file transfer and voice communications for citywide fleet operations.

Regional service

- **Bell Atlantic Corp.** will provide two-way data communications over existing regional cellular networks using technology from Cellular Data, Inc.

Nationwide service

- **RAM Mobile Data** provides packet radio service in most cities and offers gateways to public E-mail networks through resellers.
- **ARDIS Co.** provides packet radio service in most cities and builds business applications that support peer-to-peer messaging.
- **Mobile Telecommunication Technologies Corp.** will provide near real-time messaging for mobile workers equipped with pager-like devices.

Worldwide service

- **Orbital Communications Corp.** will use low-earth orbit satellite service to provide two-way store-and-forward messaging via pocket-sized communicators.

GRAPHIC BY SUSAN J. CHAMPENY

Will wireless messaging be 'killer application' of '90s?

Firms scramble to stake claim in emerging mart.

By Wayne Eckerson
Senior Editor

Visions of a huge business and consumer market for two-way wireless messaging services have carriers, paging companies and computer firms rushing to introduce products and services that will capture market share.

As mobile workers seek greater ease in communicating with one another and home offices, vendors are staking out different segments of the wireless messaging market. Some are targeting nationwide service with access to public electronic mail networks, while others are focusing on the provisioning of metropolitan, regional or worldwide service.

"Wireless messaging is going to be the killer application of the 1990s," said Bob Rosenberg, president of Insight Research Corp., a market research firm in Livingston, N.J.

RAM leads the way

Perhaps the company that is pushing wireless messaging the hardest is RAM Mobile Data, which runs a nationwide packet radio network that currently operates in 50 major U.S. metropolitan areas. Last March, RAM Mobile Data established a wireless messaging business unit to encourage E-mail vendors to produce wireless versions of their software.

The first fruits of the new business unit were clearly evident two months ago at INTEROP 92 Fall in San Francisco. There, RAM Mobile Data made a big splash when it announced relationships with nine vendors, ranging from software developers to public E-mail carriers. The alliance partners, which include Lotus Development Corp., WordPerfect Corp. and AT&T EasyLink, announced support for wireless messaging across RAM Mobile Data's radio network.

"The prospects of being able to use E-mail untethered is going to be appealing to lots of people," said Howard Case, director of RAM Mobile Data's wireless messaging business unit.

One alliance partner, RadioMail Corp. of Menlo Park, Calif., will use RAM Mobile Data's radio network to offer a wireless gateway service between mobile wireless users and a variety of E-mail networks, including public messaging nets, such as MCI Mail and the Internet, as well as X.400 nets and private cc:Mail networks.

To bring two-way messaging to the masses, RadioMail and Ericsson GE Mobile Communications, Inc. are jointly offering Viking Express, a two-way wireless package that has a hand-held computer from Hewlett-Packard Co., RadioMail E-mail software, a RAM Mobile Data radio modem and subscription to Ra-

(continued on page 30)

Looking for the best net-building strategy

Users should mix the best of vendor products when extending LAN apps across enterprise.

By Timothy O'Brien
West Coast Bureau Chief

As users look for ways to extend LAN applications across enterprise networks, some analysts suggest the best approach is to use a combination of leading network products instead of relying on a single vendor's solution.

This approach has been made all the more possible by the recent announcement of Banyan Systems, Inc.'s Enterprise Network Services (ENS) for NetWare and Unix. Until now part of its VINES operating system, ENS includes the highly regarded StreetTalk directory service, as well as other integrated services such as security, wide-area communications, network management and messaging offerings.

By using Novell, Inc.'s NetWare for file and print services, Banyan's ENS for distributed application support and management, and Microsoft Corp.'s Windows as the client operating system, it is possible for users to create an integrated net platform that supports the deployment of enterprise applications.

Although users appear to prefer the best-of-breed approach to desktop or local-area network applications over integrated packages that offer fewer capabilities, most do not seem to realize that taking a similar approach to the network operating system makes it possible to assemble a best-of-breed network platform for application support.

"We are witness to a distinct, emerging market for network services that are available independent of any network operating system," said Craig Burton, president of The Burton Group, a consulting firm in Salt Lake City. "The reason for this is clear: Customers want services to simplify what they have already, not more investments and hard choices between monolithic systems."

Novell, the overwhelming leader in the network operating system marketplace, started out in 1984 with the best LAN operating system for departmental use. Since its product, NetWare, was optimized for smaller, less complex LAN configurations, corporations starting out with just personal computer networks turned to Novell in droves.

Now with an estimated 60% of the net operating system market, Novell has become the de facto standard for LAN-based file and print services.

As a result, the NetWare platform has also become one of the most highly supported platforms by third-party developers for both applications and add-on products in areas such as communications and databases.

Despite NetWare's popularity, large Novell customers are growing increasingly frustrated with NetWare's lack of directory services and other features needed to support and manage applications across an enterprise. Although many of these features are expected in Novell's upcoming 4.0 release due out next year, Novell is not expected to be able to easily meet all of the application and integration requirements of its customers.

> "Customers want services to simplify what they have already," Burton said.

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As an example, the cost and difficulty of upgrading multiple versions of NetWare to 4.0 appears to be one of the earliest signs of resistance users are showing to a Novell-only solution.

One piece of evidence that users are leaning toward a best-of-breed approach is in the growing popularity of Microsoft Windows at the desktop, including its more frequent use as a client operating system and as a front end for back-end services. In fact, the peer-to-peer version of Windows, Windows for Workgroups, provides full NetWare client support, allowing access to NetWare and

(continued on page 31)

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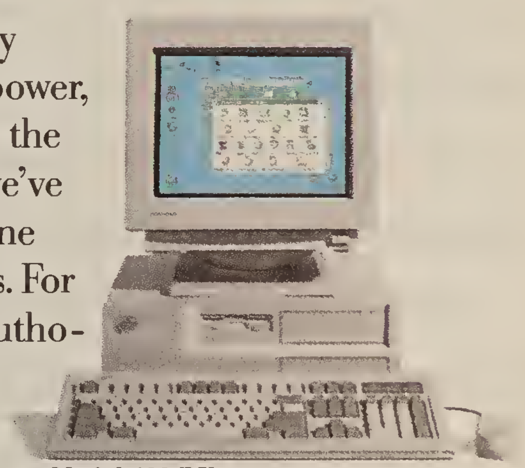

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'Killer application' of '90s?

continued from page 27

dioMail service. The package costs $1,995 and requires users to pay an $89 monthly fee for the first 100 messages and 29 cents a message after that.

The people most excited by Viking Express have been reporters, lawyers and salespeople who are very mobile and are frequently under pressure of a deadline, said Bill Hipp, president of RadioMail in Menlo Park, Calif.

Although RAM Mobile Data and other wireless vendors are starting to introduce wireless applications, most users won't invest in wireless messaging until the price of radio modems drops from more than $1,000 to about $500, said Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill.

He added that most casual E-mail users, such as traveling executives and salespeople, won't be bothered with wireless messaging unless the radio modem can be integrated into a laptop or pocket computer.

"People don't want to carry two separate devices," Brodsky said. "But it will take some time before manufacturers are able to overcome interference problems associated with placing a radio inside a portable computer.

Integrated messaging

While RAM Mobile Data is aggressively trying to build a market for two-way wireless messaging, its archrival, ARDIS Co., is taking a more conservative tack.

ARDIS — which operates a nationwide packet radio network in more than 400 metropolitan areas and is jointly owned by Motorola, Inc. and IBM — is targeting large business customers that need wireless functionality to support field service personnel. ARDIS believes that the only real market for wireless messaging is within specialized business applications, such as order processing and inventory inquiry.

"There is a market for messaging, not E-mail," said Bruce Martin, vice-president of business development at ARDIS in Lincolnshire, Ill.

Nevertheless, Martin said ARDIS will eventually follow RAM Mobile Data's suit and provide access to ARDIS wireless services from commonly used E-mail software and public E-mail networks.

In addition, Martin mentioned that Motorola recently introduced the InfoTac, a pocket-sized radio packet modem that doubles as a two-way wireless messaging device.

The InfoTac, which costs $1,350, can be plugged into a laptop to send and receive data across wireless networks including ARDIS' net. As a stand-alone device, it can receive short messages and allow users to acknowledge receipt and send customized responses.

"The InfoTac is geared toward salesmen and executives, and enables us to broaden connectivity to ARDIS," Martin said.

Currently, ARDIS users primarily use Motorola's KDT 840 hand-held data terminal for accessing ARDIS.

Two-way messaging pagers

Another company that has its eyes on the two-way wireless messaging market is Mobile Telecommunication Technologies Corp. (Mtel), parent of SkyTel Corp. Mtel recently received an experimental license from the Federal Communications Commission to build a nationwide wireless network for the purpose of providing two-way wireless messaging.

Mtel's approach to the wireless messaging market reflects its background in paging services. Mtel's Nationwide Wireless Network will provide almost instantaneous two-way messaging via pager-sized devices, according to Dave Garrison, president of SkyTel. This contrasts with most wireless E-mail services that support store-and-forward service.

Garrison said Mtel plans to keep the hand-held device as small as possible by limiting the length of messages users can transmit and designing the service to minimize power consumption and battery size. Users will be able to send and receive up to 3,000 characters at 28K bit/sec, he said.

To attract the range of businesses that currently use pagers, Mtel plans to sell the two-way message devices for between $300 to $500, Garrison said.

Wireless messaging niches

As Mtel gears up to provide nationwide service, other companies with assorted wireless technologies are moving quickly to capture niche wireless markets.

For example, Racotek, Inc. provides two-way voice and data trunked radio service in 1,500 towns and cities nationwide.

Founded in mid-1990, Racotek differentiates itself from RAM Mobile Data and others by providing metropolitan-based wireless data communications services at a low cost.

Racotek services, which cost $28 to $55 per month, are used primarily by citywide fleet operations and trucking companies, which access the specialized mobile radio net via data terminals mounted in vehicles, DOS-based laptops or hand-held devices from Fujitsu, Ltd., Telxon Corp. or IBM.

Cellular carriers are rushing to offer radio-based data services on a regional basis at first and then nationwide as separate cellular networks are tied together.

Cellular carriers have a distinct advantage over other wireless network providers because they already have an extensive network of radio towers to support data transmission. The density of cell sites means it takes less power to send and receive radio signals, allowing users to carry smaller terminal devices.

The first cellular carrier to provide packet radio may well be Bell Atlantic Corp. The regional Bell holding company has invested $1 million in Cellular Data, Inc., which has developed transmission technology that allows

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cellular carriers to carry 2.4K bit/sec packet radio channels between cellular voice channels.

According to Bell Atlantic officials, the new packet cellular network should be operational next year in the Baltimore area and will support messaging, as well as file transfers and data access. Bell Atlantic plans to allow companies such as Westinghouse Communications to resell services on the cellular data net.

For worldwide wireless coverage, Orbital Communications Corp. (OrbComm) plans to deploy a low-earth orbit (LEO) satellite service, which will enable travelers to use low-cost, pocket-sized devices that can send and receive E-mail messages anywhere in the world. OrbComm plans to deploy service in the Western Hemisphere next year and worldwide by 1994.

The use of LEO satellites, which circle the earth at much lower altitudes than other satellites, reduces the amount of power needed to send and receive messages from a hand-held device. Because the devices can use a smaller battery, OrbComm can offer a portable messaging device that fits in a person's pocket and can be used virtually anywhere in the world. ◘

Looking for best net strategy

continued from page 27

Microsoft LAN Manager servers.

Although users are expecting this desktop functionality to be extended and managed across the enterprise through advanced LAN server facilities, it will not be Novell or Microsoft performing this role anytime soon.

Instead, analysts say the role will go to Banyan since it is the only one of the three vendors with a set of unbundled network services such as directory services and administration that support both Windows at the client and NetWare at the server.

Banyan, in its characteristic low-profile marketing approach, has positioned its ENS offering more as a tool for administrators of small NetWare 2.X and 3.X LANs than as a platform for distributed applications in a multivendor network environment. This is because Novell is expecting users to upgrade to Version 4.0 to get its directory services.

Others, however, see ENS as having more potential.

"Banyan, with ENS for NetWare, is well positioned to become the leader in this new and important market by simply giving customers a solution that fits their problem," Burton said.

As an example of how this best-of-breed network platform could affect applications, one can look at the leading work group program, Lotus Development Corp.'s Notes.

At the desktop, Notes supports Windows and takes advantage of many Windows features, such as the Dynamic Data Exchange protocol and Object Linking and Embedding, that allow its integration with other applications.

At the server, Notes runs on a dedicated OS/2 machine and supports all the leading LAN environments. Lotus and Novell have announced a long-range plan that calls for Lotus to develop a version of Notes as a NetWare Loadable Module.

In terms of Banyan support, Lotus has already made Notes compatible with the StreetTalk directory and enabled it to use all of Banyan's services in a wide-area network configuration.

As a result, by using Banyan's ENS services in conjunction with NetWare as a platform to deploy Notes in an enterprise network configuration, users can gain additional directory, management and communications capabilities that won't be available in Novell-only environments for quite some time, if ever.

Since new applications can be developed, distributed and maintained on the enterprise platform created by combining NetWare, Windows and ENS, it is expected that developers of a variety of LAN-based applications will be looking to leverage the enterprise link.

"We view Banyan ENS as a powerful means to take advantage of Banyan's messaging services and create an environment where information can be easily processed, shared and presented," said Dan Lunt, vice-president of marketing at WordPerfect Corp.

Of course, some analysts believe the best-of-breed argument works fine with applications but not with LAN operating systems. They say a network operating system is much more complex and it isn't reasonable to expect to be able to mix and match multivendor products anytime soon.

However, other analysts say this is an out-of-date view. They predict that it will be difficult for anybody to displace NetWare for file and print services or Windows at the desktop.

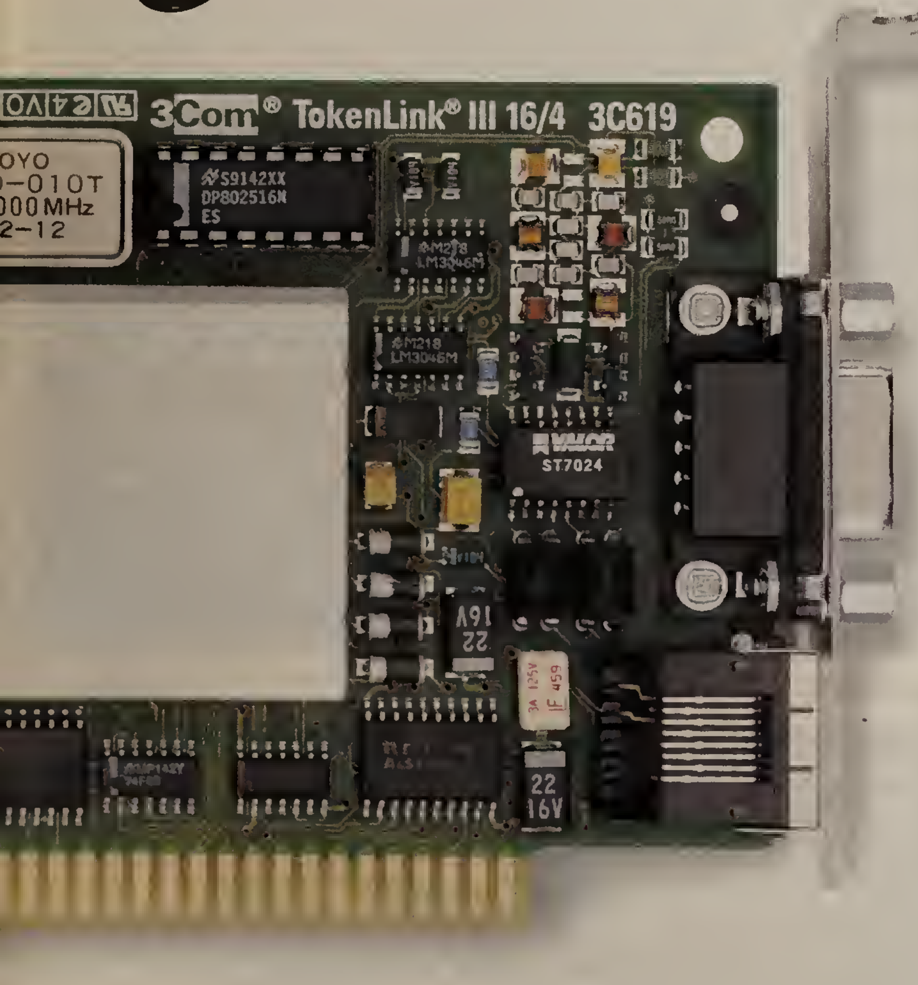
"Users want to retain the investment in what they have, but at the same time, they want to be able to combine the best available desktop and LAN technology to provide the widest application support," said Ann Palermo, research director at International Data Corp. in Framingham, Mass. "We have accepted heterogeneous desktops; now we need to accept heterogeneous LANs."

Analysts are also saying Banyan should consider using some of the industry's new middleware tools — from companies such as Horizon Strategies, Inc. and Peer-Logic, Inc. — to more quickly port ENS to a range of platforms.

While ENS support for NetWare and Unix is a good start, analysts say Banyan has traditionally moved slowly to attack new markets. With these middleware tools, they predict Banyan could offer ENS on mainframes, midrange computers and other Unix systems in a matter of months, not years.

If that were to happen, the combination of NetWare, Windows and ENS would prove to be an unexpected challenger in the evolving market for distributed operating environments supporting the next generation of applications. And ironically, these platform components are all available today. ◘

big and blue on the inside.



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TA110	Terminal Adapter	1 Ch. @ 64K 1 Ch. @ 16K	ISDN	X.25 PAD
TA120	Terminal Adapter	2 Ch. @ 64K 1 Ch. @ 16K	ISDN	Supports Voice & Data
TA220	Terminal Adapter	2 Ch. @ 64K 1 Ch. @ 16K	ISDN	Combines "B" Channels
FT100S	DSU/CSU	56K-1.544Mb	T1/ Frac. T1	Single Port
FT100	DSU/CSU	56K-1.544Mb	T1/ Frac. T1	Dual Port (Expandable)
DDS/MR1	DSU/CSU	56 Kbps	DDS	All DDS Rates
DDS/V.32	DSU with V.32 Modem	56 Kbps	DDS/ Analog	Auto-dial Backup
T1-ESF-CSU	CSU	1.544 Mbps	T1	ESF & D4 Framing
Digital-DBU	Digital Dial Backup	56K-1.544Mb	DDS/ Frac. T1	Universal Digital Dial Backup

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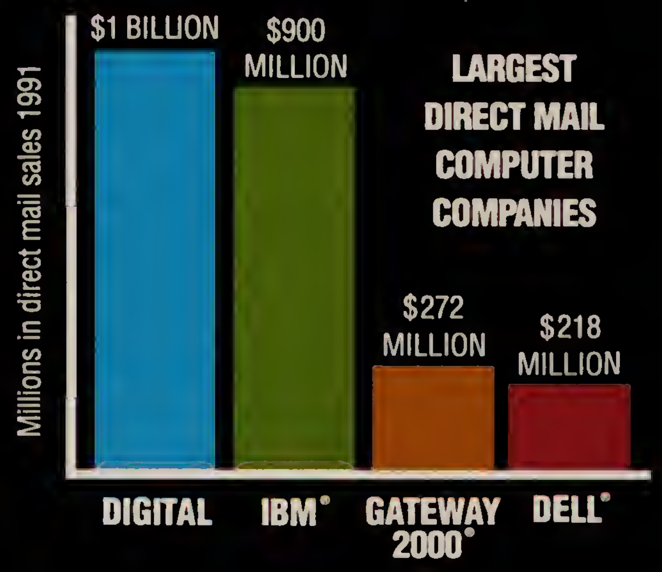

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The Outlook on Professional Computing
August 24, 1992

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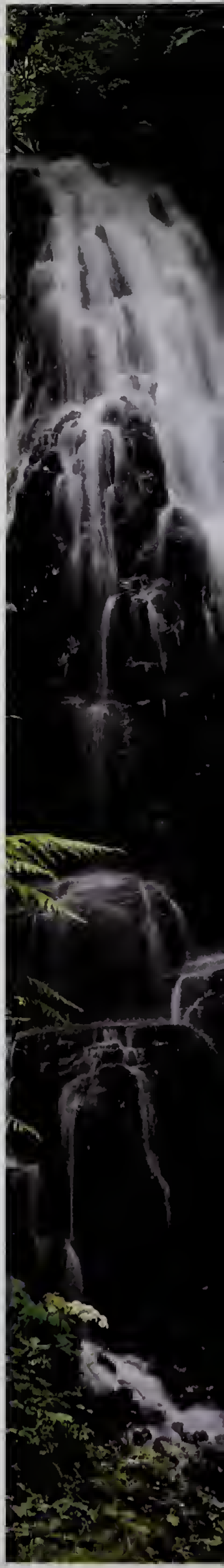

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS, ALLIANCES AND FINANCIALS

Worth Noting

> "There will be a huge boom [in market demand] for ATM when we finally succeed in approving an ATM standard for twisted pair."
>
> **Fred Sammartino**
> Chairman and president
> The ATM Forum
> San Francisco

People & Positions

The **IBM** board of directors has promoted five division managers to senior vice-president, a move that may provide insight into who will succeed John Akers as IBM's chairman and chief executive officer.

The new senior vice-presidents are **James Cannavino,** general manager of personal systems; **Ellen Hancock,** general manager of networking systems; **Robert LaBant,** general manager of IBM North America; **Ned Lautenbach,** president and representative director of IBM Asia Pacific; and **Bernard Puckett,** general manager of application solutions.

Although their job titles and responsibilities remain the same, the five have joined the small upper rank of eight other IBM executives holding the senior vice-president title.

Novell, Inc., a Provo, Utah, network operating system software vendor, last week announced the appointment of **Arthur Ehrlich** as vice-president of the newly formed Asia and Pacific operations.

Ehrlich will be responsible for sales and operations for Australia, Hong Kong, Singapore, South Korea and Taiwan. Previously, Ehrlich was general manager of Novell Australia. ◻

Windata and Raytheon to construct wireless chipset

Product to spark release of many wireless wares.

By Bob Brown
Senior Editor

NORTHBOROUGH, Mass. — Windata, Inc., a vendor of wireless local-area networks, last week agreed to team with Raytheon Co. to develop a chipset that will make it easier and less expensive for vendors to add wireless network support to their products.

Availability of the three-chip gallium arsenide chipset, which would replace usage of discrete components, should result in a greater variety of wireless products and at lower prices than existing wireless offerings, according to the companies.

Wireless support today is typically achieved using multiple discrete components, which can be time-consuming to develop and expensive to build, said Bob Rosenbaum, director of marketing at Windata. While there are chipsets available for some wireless technologies, Rosenbaum said there are not yet any for the same frequency bands being targeted by Windata and Raytheon, he said.

Bob Rosenbaum

The Windata-Raytheon chipset will support spread-spectrum transmission in the 2.4-GHz and 5.8-GHz bands, which have been identified for commercial, nonlicensed use by the Federal Communications Commission.

The companies' chipset is expected to reduce the cost of building wireless communications gear from between 25% and 50% during the next 12 to 18 months, Rosenbaum said. Much of these sav-

(continued on page 36)

INDUSTRY BRIEFS

D&B Software to reorganize, cut jobs. Dun & Bradstreet Software, an Atlanta-based application software development business owned by The Dun & Bradstreet Corp., last week announced plans to cut its 3,000-person work force by 13% before the end of 1993 as part of a reorganization.

The company plans to shift its product focus — a move expected to result in slow near-term revenue growth and require a different employee skill base — to three strategic areas: client/server computing, downsizing and distributed applications, and traditional IBM host-based applications.

"We regret the loss of jobs, but the evolutionary changes in our industry require a change in our employee base," said D&B Software President Hank Holland. "Market conditions point to another challenging year in 1993. And the direction for D&B Software for the 1990s and beyond dictates a leaner and more focused company."

Novell, Texas Microsystems team up. Novell, Inc., a Provo, Utah, network operating system vendor, and Texas Microsystems, Inc., a vendor of fault-tolerant personal computers in Houston, last week announced the signing of an OEM agreement under which Texas Micro will integrate Novell software into its microcomputers. Under the terms of the agreement, authorized Novell NetWare dealers can sell NetWare as well as Novell router and Systems Network Architecture software on Texas Micro's hardware. The agreement also calls for cooperative marketing efforts between Novell and Texas

(continued on page 36)

The North American Free Trade Agreement

How it affects users and vendors

- Vendors and users are permitted to move information within and across national borders without restriction and have the ability to access information contained in databases anywhere in North America.
- Customers can use private lines to access international private lines or public network services for their own purposes or to provide services – other than monopoly-provided basic services – to third parties.
- Users and vendors of value-added and other advanced telecommunications services can use protocols of their choice.
- Users are free to purchase or lease terminal equipment best suited to their needs and attach it to the public network.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: DEBEVOISE & PLIMPTON, WASHINGTON, D.C.

Mexico may relax networking policies

In conjunction with NAFTA negotiations, U.S. hopes to improve networking south of border.

By Ellen Messmer
Senior Correspondent

WASHINGTON, D.C. — The North American Free Trade Agreement (NAFTA), the accord among the U.S., Mexico and Canada to eliminate trade barriers, promises to benefit the telecommunications industry and users.

The 1,000-page NAFTA contains a number of telecommunications provisions designed to eliminate restrictions on equipment use and industry investment. While the U.S. and Canada are already fairly liberalized, Mexico took the boldest steps during the negotiations to reshape its policy so that a networking free-trade zone could be created between the three neighbors.

With the growing importance of Mexico to the U.S. economy — it is now the third largest U.S. trading partner — NAFTA negotiators considered establishing an improved telecommunications environment for users south of the border as a vital part of the agreement.

"At the highest level, we looked at telecommunications as the central infrastructure to support trade between the nations," said David Long, director of telecommunications trade policy at the Office of the U.S. Trade Representative. "We needed to assure that a full range of telecommunications services could be made available to the region."

President Bush is expected to sign the agreement presented by the U.S. Trade Representative, but it still faces approval by Congress. Although President-Elect Bill Clinton has voiced support for NAFTA, his administration may be tempted to make changes by adding environmental regulations, a move that could force open negotiations again or derail the agreement entirely.

Under NAFTA, Mexico will relax restrictions and allow users to connect any type of equipment to private or public switched networks by Jan. 1, 1994, and run any network protocol of their choice. Only a determination of "network harm" would restrict use, the prevailing guideline in the U.S. today.

NAFTA ensures that remote database access and remote data processing would be allowed on a cross-border basis by 1994, as well, removing uncertainties about regulation and nailing down commitment from Mexico on a cross-border basis.

The Mexican post, telegraph and telephone administration monopoly provider Telefonos de Mexico S.A. de C.V. (TelMex) would have to make private leased circuits available on a flat-rate pricing basis, something not

(continued on page 37)

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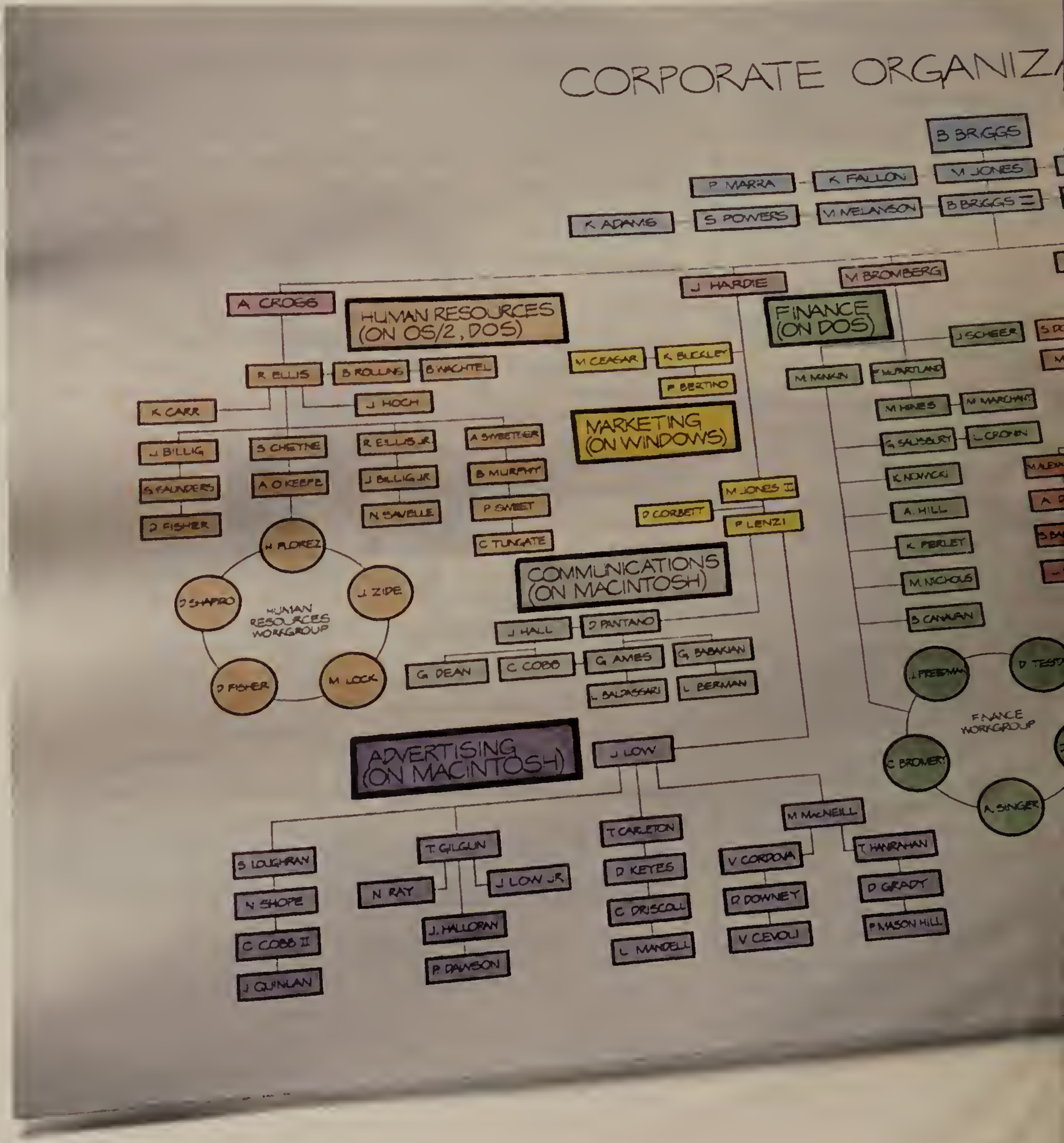

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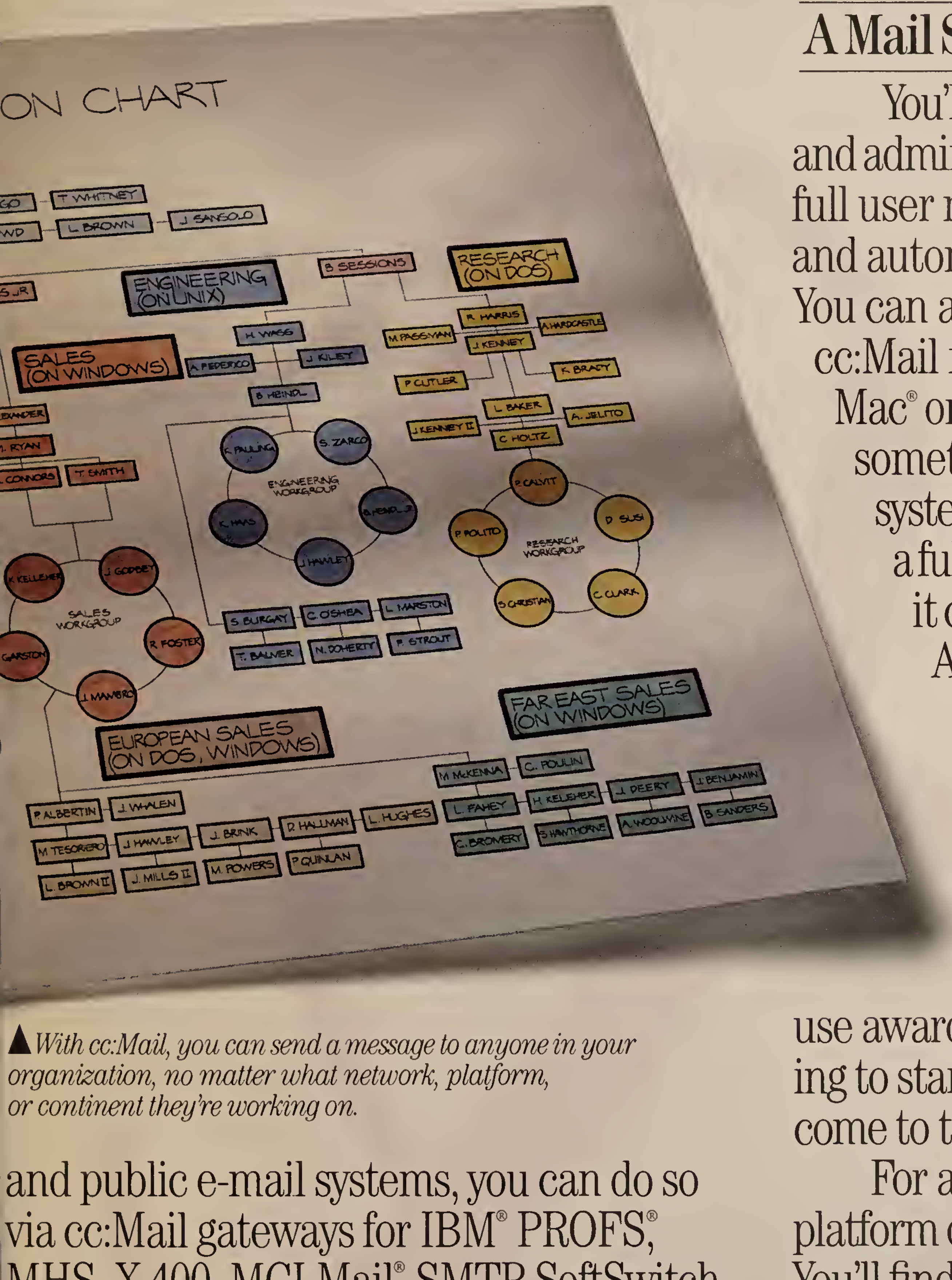

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DEC rolls out new NAS program to recognize interoperable apps

By Bob Brown
Senior Editor

MAYNARD, Mass. — Digital Equipment Corp. recently announced the Network Application Support (NAS) Advantage Application Conformance Program to highlight interoperable NAS applications.

Under the new program, DEC will provide a separate level of recognition for applications from NAS partners whose products conform to all applicable industry standards embodied in NAS and are available on at least two computing platforms supported by NAS.

DEC's NAS architecture consists of a suite of standards-based software, which DEC officials call middleware, that enables multiple vendors' applications to work on a variety of different operating systems and hardware platforms. NAS supports standards such as X.400, as well as specifications from industry consortia such as the SQL Access Group.

> "This new NAS category is really being formed on behalf of mutual customers to better ensure that applications they buy from different vendors work together."
>
> ▲▲▲

DEC hopes to highlight applications from about 100 of these vendors in a catalog of vendors and applications that qualify under the new program by next summer as well as provide additional promotional opportunities to them.

"This new NAS category is really being formed on behalf of mutual customers to better ensure that applications they buy from different vendors work together," said Dennis Phelan, DEC's NAS marketing manager.

The first three vendors whose applications qualify for the new NAS program are: SAS Institute, a Cary, N.C., vendor of information delivery software; Uniface International B.V., a vendor of open systems application development tools in Amsterdam; and Verity, Inc., a document retrieval software vendor in Mountain View, Calif.

All applications qualifying under the new NAS program will be tested and verified by the individual software developers to work with the appropriate NAS products. DEC will review each submission before including it in the program.

Firms to construct wireless chipset

continued from page 33

ings could be passed along to users as a way for vendors to generate interest in the wireless market, he said.

The companies plan to make the chipset available in the second half of 1993, which means it could start showing up in products, such as routers, hubs, adapter cards, private branch exchanges and even robots, before the end of next year, Rosenbaum said.

"Vendors are looking at doing various things with wireless, but they haven't been going forward because of the price associated with the [radio frequency] components as well as the engineering costs that go with that," Rosenbaum said. "Developing the [radio frequency] part of wireless has always been the black magic."

Rosenbaum said he believes vendors will want to build products in the 2.4-GHz and 5.8-GHz bands because they do not require FCC licensing, making it easier for users to adopt the products. These bands have been approved for use in many other countries.

Industry Briefs

continued from page 33

Micro, both of whose logos will appear on the offerings.

Sprint obtains U.K interest. Sprint Corp. has acquired the remaining 51% interest in X.25 and frame relay equipment provider Plessey Telenet, Ltd. from General Electric Co.-Siemens AG, its partner in the U.K. joint venture. The parties refused to disclose financial terms of the buyout.

Sprint also announced frame relay ser-

&

vice contracts worth a combined $8 million with two U.K. companies, British Gas, Plc. and Severn Trent Water, Ltd.

Rockwell calls on Telrad. Rockwell International Corp. last week announced the signing of a three-year, multimillion-dollar OEM agreement with Telrad Telecommunications, Inc. under which Telrad will provide Integrated Services Digital Network-compatible telephone consoles for use with Rockwell's Spectrum call processing system. Spectrum combines automatic call distribution, outbound call management and private branch exchange functions. Telrad is based in Woodbury, N.Y., and Rockwell is located in Pittsburgh.

BT to resell gear. BT last week announced OEM agreements with Cisco Systems, Inc. of Menlo Park, Calif., and Fibronics International, Inc. of Pembroke, Mass., to resell their gear. BT will resell Cisco's entire line of routers and internetworking products. Also, BT will become a worldwide supplier of Fibronics' MultiHub fiber-optic multiplexer in a two-year deal initially worth more than $8 million. ◻

Mexico may relax networking policies

continued from page 33

uniformly done today. The tariffing requirement in Mexico for enhanced service providers would be eliminated. Until July 1, 1995, providers of videotex and enhanced packet-switched services will be required to maintain a local presence in Mexico.

The U.S. and Canada have agreed to remove all tariffs on telecommunications products, while Mexico will keep some tariffs on telephone handsets and central office switching equipment, with the promise of phasing these tariffs out over a four-year period.

Currently, foreign investors can own up to 49% of the equity in a company offering value-added services in Mexico. As of 1994, foreign investors will be able to own 100% equity in companies offering electronic mail or data processing.

The old restriction would still apply to companies offering videotex and enhanced packet switching. But NAFTA requires removal of the last of these investment barriers by July 1, 1995, according to Debevoise & Plimpton, a law firm here specializing in international telecommunications (see graphic, page 33).

Opening the door

The Mexican government has also made a strong commitment under NAFTA to make the regulatory system more open and transparent to users, said Jeffrey Cunard, a lawyer at Debevoise & Plimpton.

"Whether businesses provide telecommunications services and equipment directly or whether they are dependent on telecommunications, the benefits of NAFTA will be significant and the agreement deserves strong industry support," the law firm stated in a recent analysis of the NAFTA document.

"What will NAFTA do?" asked David Fine, assistant vice-president for government and international relations at Southwestern Bell Corp., which is a major investor in TelMex. "There will be new opportunities for equipment and service providers." NAFTA opens up the market for enhanced telecommunications services in Mexico, he added.

Although NAFTA does not eliminate the TelMex monopoly hold on the basic services of voice telephony, nor does it eliminate the historic restriction of permitting the resale of up to only 30% of the capacity of a private-line network, it opens the door to the possibility of greater long-distance competition in Mexico. Also, it spells out new rules for elimination of cross-subsidy.

"Under NAFTA, cross-subsidy can occur only between rural and urban areas," said Fernando de Mateo, head of the Mexican negotiation team from the Office of the Secretary of Commerce and Industry. Under NAFTA, TelMex is not permitted to cross-subsidize value-added and monopoly services.

"NAFTA guarantees that U.S. companies can bid on all Mexican government bids, with timely notice and bid challenge procedures," said Ronald Pump, public affairs director and senior attorney at AT&T. "Through NAFTA, we've rationalized our trading relations with our two most important partners."

Under NAFTA, the three countries have agreed to set up a regime for mutual recognition of test results so that manufacturers will not need to have their products tested in each of the three countries.

"This will drive down the cost of doing business in Mexico and the cost of building networks," said Ivan Shefrin, president of Network Performance Systems, Inc. "Right now it costs as much as $50,000 or more to type-approve a piece of equipment in Mexico. Hopefully, this will allow companies to submit test data performed in the U.S. for approval in Mexico." ◻

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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Worth Noting

Nearly 75% of the 130 manufacturing companies recently surveyed by Expandable Software, Inc., a software supplier in Santa Clara, Calif., said they have gained a competitive advantage from running financial and factory planning applications on LANs vs. mainframes.

Manager Minutes

The **Help Desk Institute (HDI)**, a Colorado Springs group that provides training, educational materials and a networking forum for help desk professionals, will hold its annual conference in Lake Buena Vista, Fla., from Jan. 31 through Feb. 4.

The conference is targeted at help desk managers and supervisors, MIS directors, systems analysts, network support personnel, computer support managers, data communications managers and voice communications personnel.

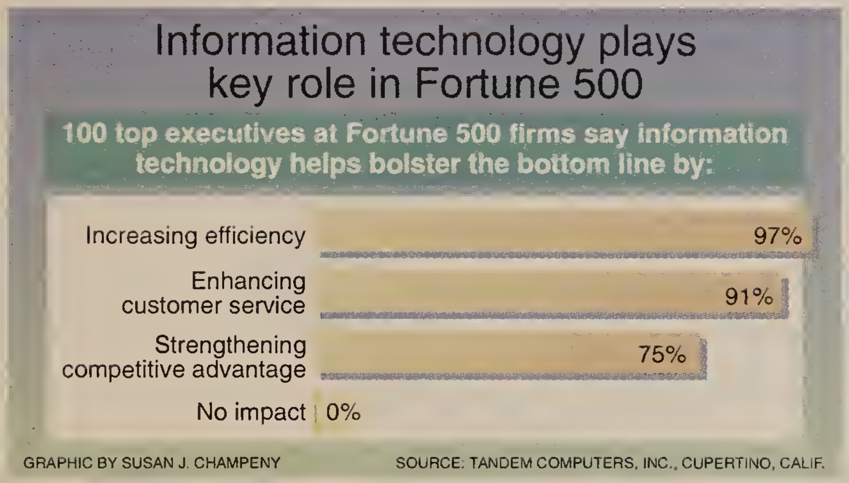
The conference will convene at the Walt Disney World Resort and include more than 70 sessions divided into six tracks: operations, tools/technology, customer service, case studies, special interest and support issues.

HDI will also present the International Help Desk Excellence Award, which is given to "the most outstanding help desk professional who has gone beyond personal excellence."

For more information, call HDI at (800) 248-5667.

The **Southeastern Telecommunications Association (SETA)**, a nonprofit

(continued on page 46)



GRAPHIC BY SUSAN J. CHAMPENY SOURCE: TANDEM COMPUTERS, INC., CUPERTINO, CALIF.

Fortune 500 relying more on IT for strategic edge

Technology playing role in customer service.

By Joanne Cummings
Senior Writer

CUPERTINO, Calif. — Executives at Fortune 500 companies are increasingly relying on information technology to boost customer service and their firms' competitive edge, according to a recent survey.

All of the executives surveyed said technology has had an impact on their business, while as many as 71% said the role technology plays in their company is increasing significantly. The survey, based on responses from 100 top executives at Fortune 500 firms, was conducted by the Gallup Organization for Tandem Computers, Inc.

> As many as 71% said the role technology plays in their company is increasing significantly.
>
> ▲▲▲

Respondents said information technology is utilized most in customer service, including order tracking, real-time payment transactions and customer records management, and in providing new information-based products and services.

When asked about the overall impact of technology on their businesses, 91% said technology plays a significant or very significant role in providing customer services, 75% said it helps their company strengthen its competitive advantage and 97% said it enables their firm to operate more efficiently (see graphic, this page).

"Instant and accurate access to information" was the most important reason respondents cited for purchasing and implementing information technology.

When asked which technology they would like to implement at their companies in the near future, the respondents said open systems, client/server architectures and distributed computing environments. Respondents also cited a need for interoperability such as between various electronic data interchange systems.

For more information or a copy of the survey, call (415) 354-8837. ◘

Retailer's satellite helps ring up sales

Frank's Nursery and Crafts improves service, store-to-store communications; adds applications.

By Joanne Cummings
Senior Writer

DETROIT — Frank's Nursery and Crafts is using a new satellite network to speed up its checkout process and support a variety of applications that improve customer service and ease store-to-store communications.

The retailer expects to eventually use the new net to support electronic data interchange transactions and to broadcast background music and business television programs to its more than 280 stores, according to Larry Buresh, vice-president of information service and distribution at Frank's, based here.

Frank's previously relied on dial-up connections to a third-party clearinghouse, which communicated with Visa International, Inc., to handle credit authorizations. That process took anywhere from 45 to 60 seconds.

"We've been able to cut that down to just seven seconds," Buresh said. "And we're currently reviewing the network to see if we can speed that up even further."

Today, when a customer pays for a purchase with a credit card, the cashier runs the card through a Verifone Model 340 card swipe unit at the register. The card data is fed from the Model 340 over a 9.6K bit/sec line to a Verifone Model 1200 controller.

The controller consolidates information from different registers and passes it over a 19.2K circuit to the satellite net's indoor unit. That unit then communicates via GTE Corp.'s G-Star satellite network to a Stratus Computer, Inc. Continuous Processing System computer at Frank's headquarters.

The Stratus computer, running StoreNet/2 retail transaction system software from Shared Financial Systems, Inc., relays the data to Visa over a leased line. When authorization is received, the Stratus machine relays the information back to the appropriate store.

According to Buresh, the cost of the multimillion-dollar project was fairly easy to justify.

"The main impetus behind the project was customer service," he said. "But it's not totally altruistic because now we can serve more customers in less time. And we're able to save a substantial amount of money by doing [authorizations] ourselves, which helped offset the cost of the satellite."

In addition, Buresh said the company was able to move all of its data communications between the stores and headquarters off a leased-line network and onto the satellite net, which was another cost saver.

And because all of the stores are linked to one another and to a mainframe at headquarters via the satellite, Frank's was able to implement several new applications to increase sales.

For example, Buresh described an application that enables each store to access inventory data residing in an Amdahl Corp. mainframe at headquarters. Thus, when one store does not have an item a customer needs, the customer can be directed to a nearby store that has the product. "And we get a sale

(continued on page 42)

EXECUTIVE BRIEFS

The art of negotiation. International Computer Negotiations, Inc. (ICN) is sponsoring a conference designed to help users protect their assets and minimize costs when purchasing network technology. Called Advanced Procurement Strategies, the conference will explore topics such as contract maintenance, computer law, hammering out software and hardware contracts and examining outsourcing issues.

The conference is scheduled for Jan. 18 in Orlando, Fla., and costs $1,395 per person. For more information, contact ICN at (407) 740-0700.

Divorcing your outsourcer. According to a recent report by Frost & Sullivan International, negotiating an escape clause in an outsourcing agreement is just as important as detailing the service levels expected from an outsourcing vendor. The report, titled "The U.S. Market for Network Outsourcing," says users should build into agreements the capability for "a rapid and nontraumatic divorce." The user should monitor the outsourcing process closely, and if service levels drop or other problems crop up, the user should be able to quickly take back control of the network. "Ideally, the contract should be written in a way that if the user wants to transfer the outsourcing

(continued on page 42)

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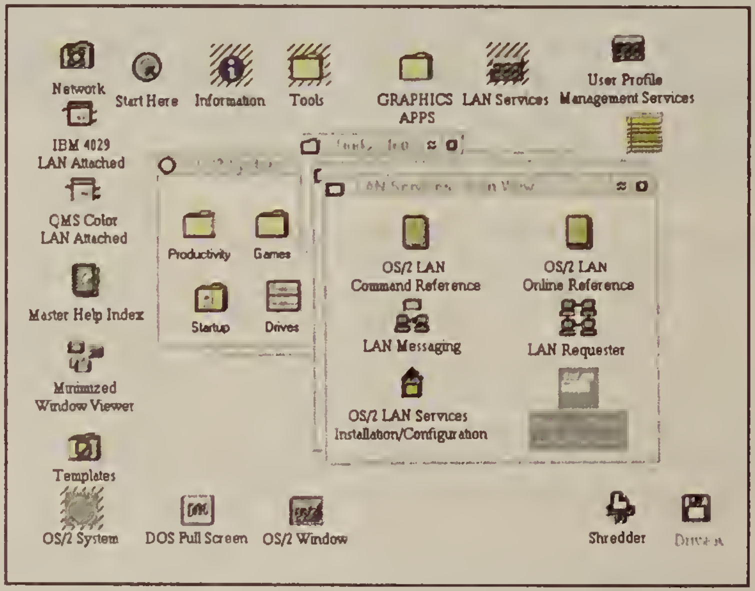

*LAN Server 3.0 promotional prices until 12/31/92: LAN Server Entry, $645, LAN Server Advanced, $1,795, and LAN Requester, $50. **In Canada, call 1 800 465-1234. IBM and OS/2 are registered trademarks and OS/2 Crash Protection and Workplace Shell are trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. © 1992 IBM Corp.

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IBM®

Satellite helps ring up sales

continued from page 39

we might not have had before," Buresh said.

Frank's had a very aggressive rollout plan for the satellite network, cutting over all of its stores in 18 states in just three months, he said. That put a lot of pressure on everyone involved and led Buresh to offer some caveats.

"There's a lot of detail to putting in a satellite system, and planning is critical," he says. "You can't plan for every variant; you need to have an organization that can react quickly."

One way to do this is to assign someone the role of decision maker. "When you're rolling out stores as fast as we were, you've got to have somebody who's on top of it at all times," he said. "This person needs to communicate with everybody involved on almost a constant basis and be able to make a decision, clear the decks and get things rolling."

Appointing a decision maker was an invaluable strategy when rolling out the satellite net, Buresh said, because one of the main problems the retailer faced was opposition to mounting the satellite dish at various stores.

"Local ordinances or a landlord would intervene, and at the last minute, we had to make changes," he said. "Having someone who could make a quick decision really worked for us."

In addition to this type of flexibility, Buresh said users planning major networking projects such as this need to form solid partnerships with their vendors.

"You have to pick a strong, reliable vendor, and when you're dealing with multiple vendors, as we were, everybody has to be comfortable with one another," he said.

> "There's a lot of detail to putting in a satellite system, and planning is critical."

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Future applications

Buresh said the retailer is currently testing EDI applications over the new network. "We're working with our first vendor now," he said. "We'll do purchase orders first, then invoices and then advance ship notices."

In the pilot, the mainframe creates a purchase order and pipes it over to the Stratus computer. The Stratus will then pass the purchase order via Ordernet or a third-party value-added network service, depending on the vendor to which it is destined. Frank's will also make purchase orders available to larger vendors that want to dial into the Stratus and pull them off.

"We have some vendors that handle 15,000 purchase orders a year, and those are the ones we'll be looking at communicating directly with," Buresh said.

In addition to EDI, the retailer will be piping preprogrammed background music and infomercials to its various stores over the satellite.

Frank's will utilize Star Communications, a GTE business partner, to broadcast taped programs every 11 minutes or so from headquarters to each store.

The retailer will also use the net to support business television, which will broadcast training, new product education and store layout programs to each store. "That will be our next-year project," Buresh said.

Executive Briefs

continued from page 39

assignment to another vendor, the current vendor is obliged to cooperate," according to the report.

The report costs $2,800. To order a copy, call (800) 735-1080.

Dial SOS for savings. Companies that subscribe to Site Operational Services (SOS), a 24-hour remote network monitoring and technical support service offered by Liebert Customer Service and Support (CSS) in Worthington, Ohio, can reap discounts of as much as 25% on their commercial property insurance premiums.

Insurance carriers such as New York-based Marine Office of America Corp. (MOAC), which said it would offer discounts of 10% to 15% for SOS subscribers, expressed support for the service.

"MOAC would anticipate losses to be minimized by the incorporation of a continuous monitoring program and provision of preventative maintenance services," an MOAC spokesman said. "We would certainly take into consideration SOS for any insured company."

For more information on SOS, call Liebert CSS at (614) 841-6400.

'Tis the season. Gifts In Kind America, an organization dedicated to helping corporations donate equipment and supplies to nonprofit organizations, is issuing a call for computer equipment and office supplies.

According to a recent survey of the nonprofits served by Gifts In Kind, more than half have budgeted less than $5,000 for equipment and the average age of computer equipment used in the organization is 4.6 years old. In addition, the survey found the staff-to-computer ratio in the nonprofits was three to one, underscoring the need for such equipment.

All donations are handled completely by Gifts In Kind at no cost to the donor company. In addition, donor companies can receive a tax deduction of up to twice the cost of the donation.

Current donors include Apple Computer, Inc., Eastman Kodak Corp., The Gillette Co. and Sears, Roebuck and Co.

For more information, call (800) 862-4438.

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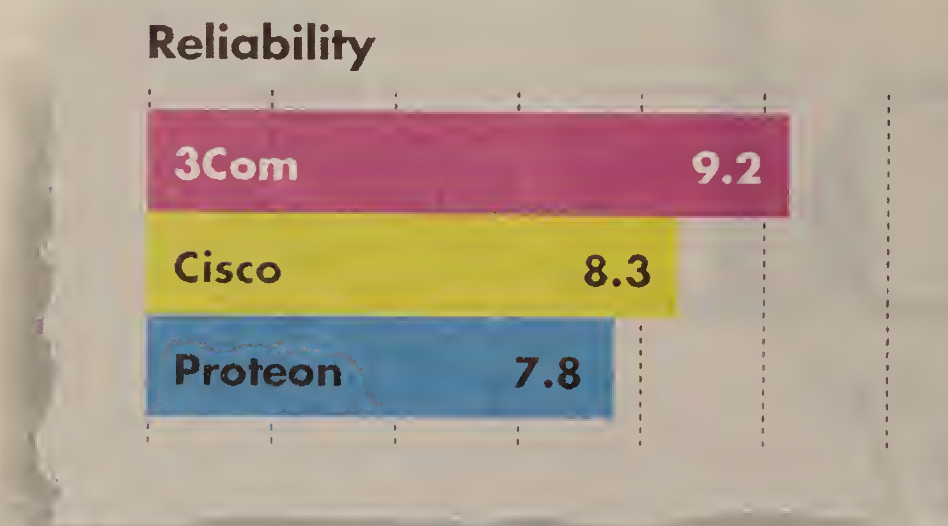

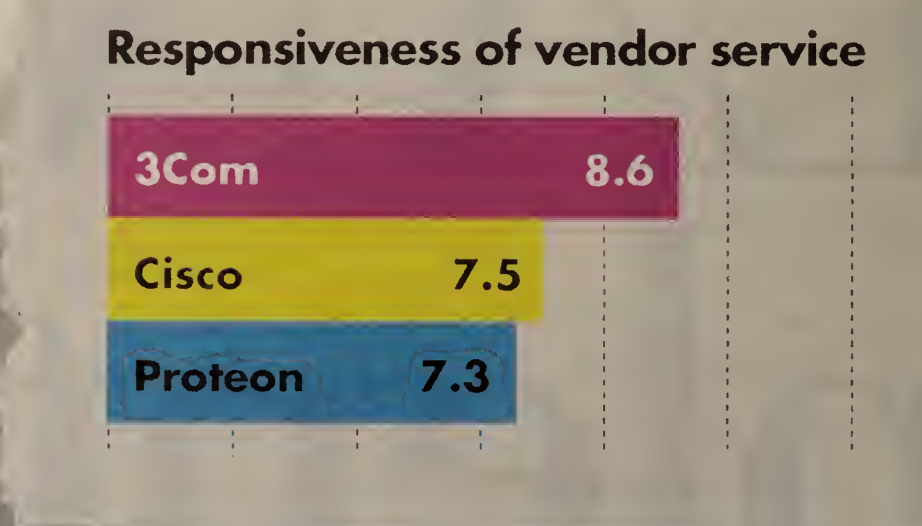

In a recent Buyers' Scorecard Survey by Computerworld *magazine, network managers rated leading bridge/routers. 3Com's NETBuilder® was rated Most Reliable, ahead of the market leader.*

In fact, NETBuilder got the highest ratings in 11 of 14 categories. That included Value, Physical Design, and Responsiveness and Quality of Vendor Service and Support.

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Cayman, Shiva enhance servers, cut back prices

By Maureen Molloy
Senior Writer

CAMBRIDGE, Mass. — AppleTalk gateway vendors Cayman Systems, Inc. and Shiva Corp. last week separately announced shipment schedules, cost reductions and enhancements to their respective remote AppleTalk servers.

Cayman, based here, said it will begin shipping its GatorLink multiport AppleTalk Remote Access Portocol (ARAP) server this week and is reducing the cost by 50% as an introductory incentive.

Shiva, also based here, announced software enhancements to its LanRover/E AppleTalk Remote Access server that will enable users to automate a range of file tasks.

Cayman's GatorLink server will enable as many as three Apple Computer, Inc. PowerBook and Macintosh computers to simultaneously dial into an EtherTalk net and access the same resources available to local nodes. It will also allow remote users to share files and databases with local Macintosh users as well as print to AppleTalk printers.

In addition, GatorLink is outfitted with a zone-hiding feature that lets net managers specify which AppleTalk zones a remote user can access. It is also equipped with SecurID support, a Unix server-based authentication system that permits net managers to authenticate both their ARAP dial-in and Unix accounts and provides an additional level of security.

GatorLink is available now at a special introductory price of $945 — less than half the list price of $1,895. The SecurID software module costs $495 and is also available now.

File management software

Shiva's file automation tasks will be provided through an agreement with Palo Alto, Calif.-based No Hands Software to bundle the latter's Macintosh-based file management program into Shiva's LanRover/E for AppleTalk Remote Access multiport server.

Dubbed Magnet, the program is based on software agents that enable users to automate a range of file-related tasks such as backup programs, file-find utility, file manager and file synchronizer. The agents essentially act as magnets, attracting files to their specified locations at specified times.

Shiva's LanRover/E is a multiport server that lets remote Macintosh and PowerBook users access information on a corporate internet.

With the addition of the new file management program, users can set up intelligent agents on the server to employ Magnet with ARAP to automate tasks such as downloading files and synchronizing calendars.

Once back at the office, users can employ Magnet to synchronize folders and files on their PowerBooks with those on their desktop Macintoshes, saving users time on the road and in the office.

Magnet is bundled with four- and eight-port LanRover/E versions. LanRover/4E for AppleTalk Remote Access costs $1999, while LanRover/8E for AppleTalk Remote Access is priced at $2999. The Magnet feature costs $129. ◘

Link Notes

continued from page 17

tisNet line of hubs that will route token-ring, Ethernet and wide-area network traffic.

Fiber Distributed Data Interface capabilities will be added later in the year.

Jointly developed with **Cisco Systems, Inc.**, the 3800 takes up two slots in the LattisNet System 3000 hub and can be configured to support any combination of local-area network and WAN interfaces.

The 3800, which will ship with one token-ring interface, will cost $6,990. The Ethernet and WAN interfaces can be added for $1,595 and $1,995, respectively.

Cabletron Systems, Inc. and **Silicon Graphics, Inc. (SGI)** last week announced a strategic alliance through which SGI will contract with Cabletron to offer IRIS NetServices, an end-user support program that offers network design, installation, analysis, troubleshooting and management services for all types of net environments.

The new service alliance extends an existing relationship between the two companies that was consummated in June 1991 when a joint product development, marketing and distribution agreement was signed.

Lexcel recently reduced the pricing for its Simple Network Management Protocol-based Lance+ net management system by more then 65%. Effective immediately, Lance+ will cost $9,500.

The reduction is intended to provide users with a more affordable entry point for the product and gain Lexcel market share, according to Tom Raimondi, vice-president of marketing at the company.

Plexcom, Inc. has rolled out the 8012SX Fiber Optic Ethernet Multiport Repeater hub module, a six-port device for the company's SX8000 Plexnet hub line that provides fiber-optic connections to remote devices such as hubs, repeaters or transceivers.

One port can also be configured as a 10Base-T, 10Base2, attachment unit interface or Fiber Optic Inter-Repeater Link port, enabling users to connect to remote Ethernet local-area networks or other Plexnet concentrators.

The 8012SX costs $1,895 and will be available in January. ◘

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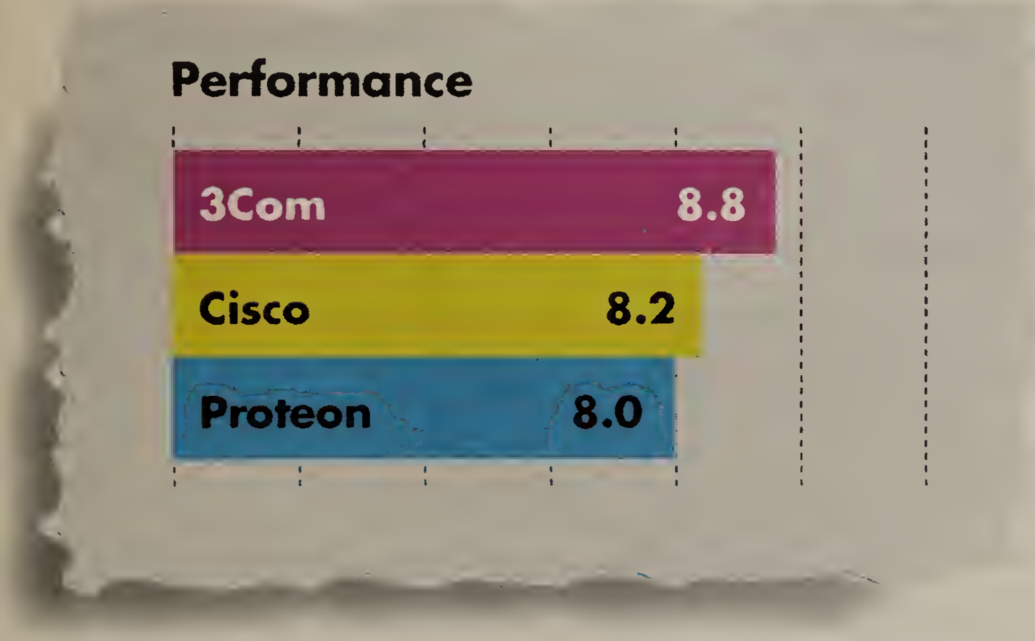

The Computerworld *survey also rated NETBuilder highest for Performance. In another recent study — this one by Harvard University — NETBuilder II was 60.1% faster than the nearest competitor for FDDI routing.*

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Manager Minutes

continued from page 39

telecommunications management organization, announced it will hold its 18th Annual Telecommunications Conference and Exhibition in Nashville Aug. 30-Sept. 1.

For more information on the conference and exhibition, contact SETA at (803) 731-5640.

SETA also announced it has elected a new board of directors.

Representing Alabama are Neil Smith of Russell Corp. and Tony Breeden of the city of Mobile; representing Florida are Steve Miller of Florida Power Corp. and Faye Tinnen of the General Services Administration; representing Georgia are Carole Harrison of Federal Reserve Bank and Betty Spencer of Arthur Andersen & Co.; representing Mississippi are Jim Winstead of the University of Southern Mississippi and Roland Clark of the University of Mississippi.

Representing North Carolina are Norman Young of Carolina Freight Carriers and Ron Hampton of USAir; representing Oklahoma are Steve Dile of the University of Oklahoma and Dick Moroz of Scrivner, Inc.; representing South Carolina are Elizabeth Woodard of the University of South Carolina and Woody Randall of Nations Bank.

Jay Parsons of the Tennessee Valley Authority and Brenda Nichols of Deloitte & Touche will represent Tennessee; representing Virginia are Vanessa Myers of the state of Virginia and Jay McCullough of Central Fidelity Bank; and representing West Virginia are Dave Kelley of United National Bank and Jim Ryan of Camden Clark Memorial Hospital. ◘

BOOK REVIEW

BY ERIC SCHMALL

New book takes a fresh look at FDDI

FDDI: An Introduction to Fiber Distributed Data Interface, Wendy H. Michael, William J. Cronin Jr. and Karl F. Pieper, (New York, Digital Press, 1993), $17.53.

Nothing in this industry succeeds as well as a clearly written, well-illustrated document on complex technology, as is amply demonstrated by Digital Press' newest book on Fiber Distributed Data Interface.

Authors Michael, Cronin and Pieper have taken a fresh look at this 100M bit/sec local-area network standard — a potentially forbidding subject — and produced an inviting and engaging initiation to it.

The authors, members of the Networks and Communications Group within Digital Equipment Corp., originally wrote this primer with specific references to DEC products. This edition, however, has been written from a generic standpoint, with no reference to proprietary equipment, thus expanding the book's appeal.

The authors give a comprehensive overview of all the essential aspects of FDDI. In 15 short chapters, they discuss cabling issues, topology and basic hardware components. They devote a significant portion to explaining how the FDDI standard relates to the Open Systems Interconnection reference model, and they explore relevant ANSI standards that form the basic foundation for FDDI.

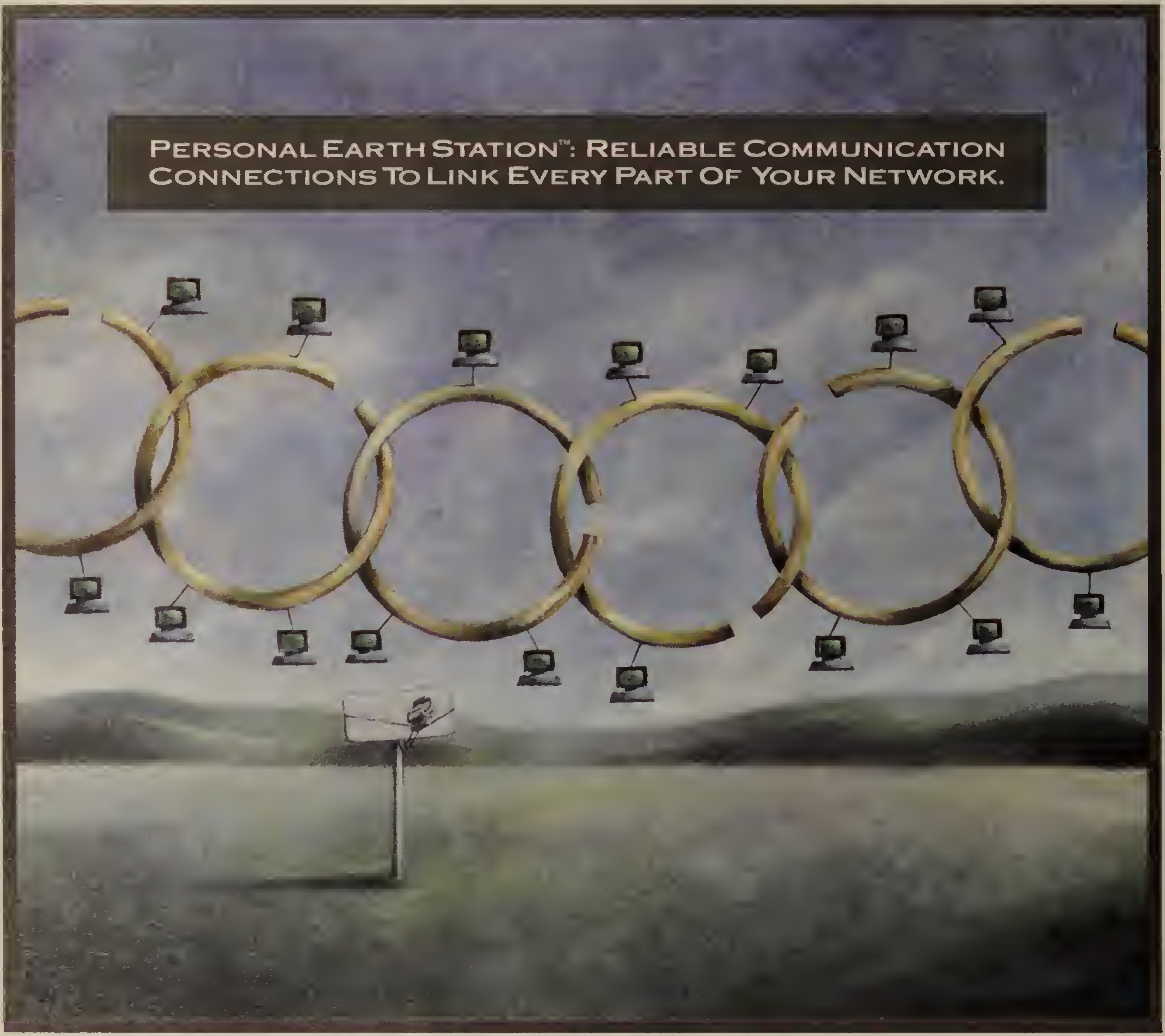
Rarely do you find books as approachable as this on LAN-related subjects. Of particular merit is the book's frequent reliance on simple, elegantly clear illustrations. The authors take care to build upon these elementary depictions, carefully explaining how the components interact, how the standards work together and how wiring topologies can be constructed.

The prose is unpretentious and unobstructed by technobabble, and the authors have included a comprehensive index and substantial glossary.

Perfect for professionals

While this book may not be elementary enough for someone who knows nothing about LANs, it is just the thing for professionals who want to learn quickly about what FDDI is, what it can provide and tips on how to implement it. The publication should be even more appealing to middle and senior managers because of its blend of technical detail and practical explanations.

The book can be ordered directly from Prentice Hall by calling (201) 767-5937. ◘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NETWORK TEAMWORK

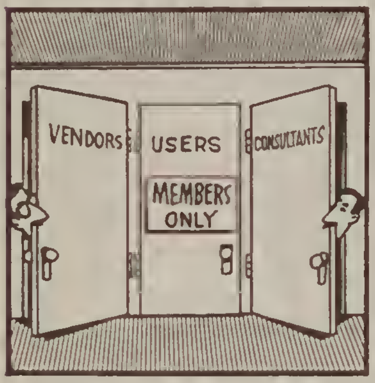
BY JAMES CARLINI

Don't lock out consultants and vendors

A recent opinion column by Jack Sobish ("Let's hear from users instead of consultants," *NW*, Nov. 16) made some pretty broad generalizations about the insights consultants can offer users and urged users to share their real-life experiences. But consultants and vendors should not be left out of this loop.

A lot of users don't have a clue about what the real trends are today, let alone have a realistic perspective on networking and strategic applications. These users can learn a lot from consultants and vendors.

Even informed users can find some benefit in bouncing ideas off consultants and vendors. In short, users, consultants and vendors can all learn from one another; when people start questioning the value of others' contributions, they get a myopic view of reality.



I love user groups that exclude consultants and vendors because they want to get a realistic view. The Chicago Industrial Communications Association is one such group. It has banned vendors and consultants. It's sad that this group doesn't realize it has lost valuable insights and real-life ideas vendors and consultants can offer.

I also wonder if there is a correlation between this lack of seeking a different perspective and the fact that many telecommunications manager positions in metropolitan Chicago have been downgraded or totally eliminated by upper management. Indeed, users that are not keeping up with technology or bringing in people with fresh ideas are being laid off. Instead of looking into crystal balls and guessing, these users should be hiring good consultants that have a broader view of marketplace realities. These users should also seek education from vendors that have a new product or service that might help their firm. At the very least, they should take some classes and update their skills.

Contrary to most network managers' thinking, the big picture — as well as the big solution — is usually found outside the internal staff. In fact, staffs that don't realize the need to seek outside help in updating technology to preserve the company's network investment risk having upper management stepping in and hiring consultants to take over projects.

To avoid upper management meddling, users should share ideas, and conferences are a good place to do it. But conferences do not have the wealth of free information and solutions many users are seeking. If a firm has just introduced a competitive advantage into its net, it is not going to share it with others for free during a conference session. A paid speaker may give some good advice, but again, you get what you pay for. Thirty minutes of good advice can be helpful, but it's not going to get you through a large systems integration project.

The bottom line is that everyone is important in this process; that's the reality of this business. Users that lose sight of this reality are often the ones that lose in the long run. ◘

Carlini is president of Carlini & Associates, Inc., a management consulting firm in Hinsdale, Ill. He also lectures on information technology at Northwestern University in Evanston, Ill.

NETWORK WORLD

Editor
John Gallant

Executive Editor
John Dix

Assistant Managing Editor — News
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Senior Editors/News Coordinators
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Caryn Gillooly — Local Networking
5423 Gladewright Drive
Centreville, Va. 22020
Phone: (703) 266-1537
Fax: (703) 266-1543

Senior Editors
Jim Duffy — Data Net Architectures
Michael Cooney — Data Net Architectures
14701 Bentley Square
Centreville, VA 22020
Phone: (703) 830-8138
Fax: (703) 830-7963

Senior Writers
Joanne Cummings — Management Strategies
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67 Highgate Road
Marlborough, MA 01752
Phone: (508) 481-6061
Fax: (508) 485-5809

Maureen Molloy — Internetworks

Staff Writer
Skip MacAskill — Internetworks

West Coast Bureau
Timothy O'Brien
Bureau Chief/Enterprise Applications
2088 Union Street, Suite 2
San Francisco, Calif. 94123
Phone: (415) 771-3530
Fax: (415) 771-2817

Washington D.C. Bureau
Anita Taff
Bureau Chief/Global Services
Phone: (202) 879-6744

Ellen Messmer — Senior Correspondent
National Place
1331 Pennsylvania Ave. NW, Suite 505
Washington, D.C. 20004
Phone: (202) 879-6752

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Network World
161 Worcester Road
Framingham, Mass. 01701
(508) 875-6400
MCI Mail — 390-4868
Fax: (508) 820-3467
R.A.F. hot line:
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EDITORIAL

Are you paying too much to network those low-cost PCs?

One thing about the personal computer price war is that it makes the cost of some other products seem pretty high.

PC sellers such as IBM, Dell Computer Corp. and Northgate Computer Systems, Inc. are finding their profit margins squeezed to the bone. Today, you can buy an Intel Corp. 80486-based desktop machine for as low as $1,200.

No doubt, users have benefited. They're snapping up the machines so fast that suppliers can't keep up with demand.

But users aren't the only beneficiaries. Software vendors, adapter card makers and others are providing add-ons for these low-cost machines that aren't nearly as price-sensitive.

Say you buy an 80486-based machine for $1,500 and want to hook it into your token-ring net. A 4M/16M bit/sec token-ring card can cost from more than $400 to nearly $850 for the IBM 16/4 Token Adapter II.

The adapter's price ranges from almost a third of the PC's cost to nearly 60%.

What about putting that PC on a Fiber Distributed Data Interface network? Well, Crescendo Communications, Inc. offers a twisted-pair adapter that costs just under $1,000, or two-thirds that of your 80486-based machine. Digital Equipment Corp. offers Extended Industry Standard Architecture-bus fiber cards that range from $2,150 to $3,500 — about 1.45 times to 2.3 times the cost of the PC.

Analysts say token-ring card makers are enjoying margins of close to 50%. While Ethernet cards are looking more like commodity items, vendors are still getting margins up to 40%.

Card makers aren't blind to the situation. In the wake of Big Blue's introduction of its PS/ValuePoint machines, a top IBM official complained it would be difficult to maintain its customary margins on adapters.

The PC market is a buyer's market today. But users ought to maintain that mentality in dealing with other suppliers. Now's the time to flex your purchasing muscle, especially if you're buying in bulk. Press for bargains when equipping the low-cost PCs you're adding to your network, or you may not reap the full dividend of this price war. ◘

THE BLUE VIEW

BY ANURA GURUGE

Hats off to Cisco for forcing IBM to open up APPN

IBM appears to be on the verge of finally answering the thorny and emotive question of how far it will go to open up its Advanced Peer-to-Peer Networking (APPN) specification, thanks to Cisco Systems, Inc.'s introduction of its competing Advanced Peer-to-Peer Internetworking (APPI). To prevent network equipment vendors from siding with Cisco, IBM agreed to open up APPN, which is good for everyone.

IBM will open APPN enough to ensure its future will no longer be a hostage to the open computing sentiment that is gripping the industry. IBM's move comes after things on the APPN front had gotten a tad acrimonious. In fact, there was even talk of litigation, with IBM and Cisco prepped for lawsuits.

Cisco's audacious and aggressive, though equally perceptive and pertinent, APPI initiative was obviously a catalyst in IBM's decision. Cisco and a consortium of vendors promising support for APPI should be warmly thanked and heartily congratulated for providing a valuable service to the internetworking community.

IBM will publish the APPN Network Node specification in much the same way it published the Systems Network Architecture Formats and Protocol Architecture Reference Manuals in the old days. For around $400,000, licensees will get software code along with the APPN Network Node specification, even though this code may be difficult to understand and use.

Vendors wishing to implement APPN Network Node code in their products without buying the $400,000 software can now theoretically do so by just buying the specification for $300 and reverse engineering it into actual code. This would put APPN on a level with traditional SNA, as this was the way many of the legendary SNA emulation products were built in the past.

Now if we could only get IBM's APPN-over-Transmission Control Protocol/Internet Protocol and APPI — which is also a form of APPN over TCP/IP — to be compatible, we would all be in good shape.

> Cisco's audacious and aggressive APPI initiative was a catalyst in IBM's decision.

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The initial implementation of APPN on IBM's 6611 Network Processor will support TCP/IP to communicate with another 6611. Though more than a little incongruous, there is some valid justification to this decision, apart from it being the most expedient avenue of getting APPN off the ground.

The 6611 — in marked contrast to other APPN implementations on IBM's System/3x0 mainframes, Application System/400 minicomputers, OS/2-based microcomputers and 3174 cluster controllers — is meant to work in predominantly TCP/IP-oriented internetworking scenarios, as opposed to SNA/Synchronous Data Link Control environments.

The irony of the 6611's APPN implementation is that while it cannot talk to another APPN Network Node, such as a 3714, it can freely interact with the APPN Network Node implementation on 3Com Corp.'s bridge/router family. 3Com was one of IBM's beta-test partners for APPN Network Node.

To build upon this advantage — and no doubt to counter the vast strides being made by the Cisco-led APPI Group — IBM decided to not only publish the APPN Network Node specification but make available its APPN code, including its 6611 Data Link Switching (DLS) feature. DLS makes it possible to encapsulate IP traffic for transmission over SNA/APPN networks. Now the pertinent questions are how IBM's APPN over TCP/IP specification will differ from APPI, if they can be made compatible and which one the industry will adopt.

Given IBM's hitherto coyness about APPN, the industry could very well decide that it feels more comfortable with a standard maintained by a multiparty consortium rather than one company.

It is true that there are still some issues, including a question over APPN patents, to be resolved before APPN can truly be deemed an open networking scheme. However, it's refreshing to see that IBM and the APPI Group have at last paved the way for APPN to become what it should have been from Day One: a worthy and open successor to SNA, which for a very long time was the de facto industry standard for cross-platform interoperability. ◘

Guruge is an independent consultant specializing in internetworking and IBM network architectures. He writes extensively, presents seminars worldwide and can be reached at (603) 878-1303 or via Internet/MCI Mail at aguruge@mcimail.com.

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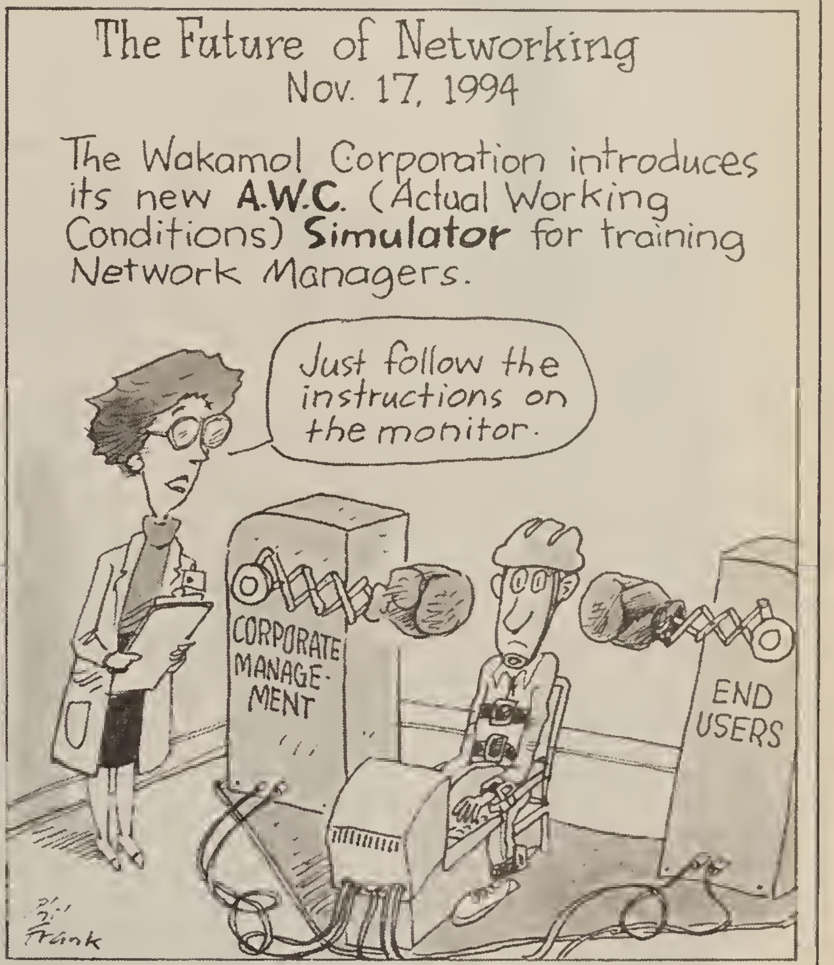
TELETOONS

BY FRANK AND TROISE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LETTERS

Left out

The recent article on wireless LANs ("Finding a niche all its own," Nov. 2) neglects to mention Proxim, Inc. as a vendor of wireless LAN equipment.

We are one of the few vendors shipping wireless local-area network products. Our RangeLAN adapters support a variety of network operating systems and computer buses. We even have an adapter that fits into the credit card-sized slots supplied on ultralight portable computers, which were announced last fall.

We are concerned that *Network World* readers have not gotten the full picture of what is really available today in this emerging market.

With so few vendors actually shipping products for this technology, we find it amazing *Network World* failed to realize that Proxim is a contributor in this market.

Paul Smith
Vice-president of
strategic marketing
Proxim

New uses for wireless LANs

The article on wireless LANs "Finding a niche all its own" omitted a major reason for user migration to radio local-area networks. Employing wireless LANs to become free of cable or for sending documents to a printer is hard to justify except in extraordinary environmental circumstances.

But using radio LANs to transact business is another matter entirely. The ability to have a terminal that can tap into the firm's data repository at a business event and engage in an interactive dialogue with an application resident in some remote host is entirely new functionality with revolutionary potential. Business practices can be permanently changed in ways that enable untrained,

(continued on page 64)

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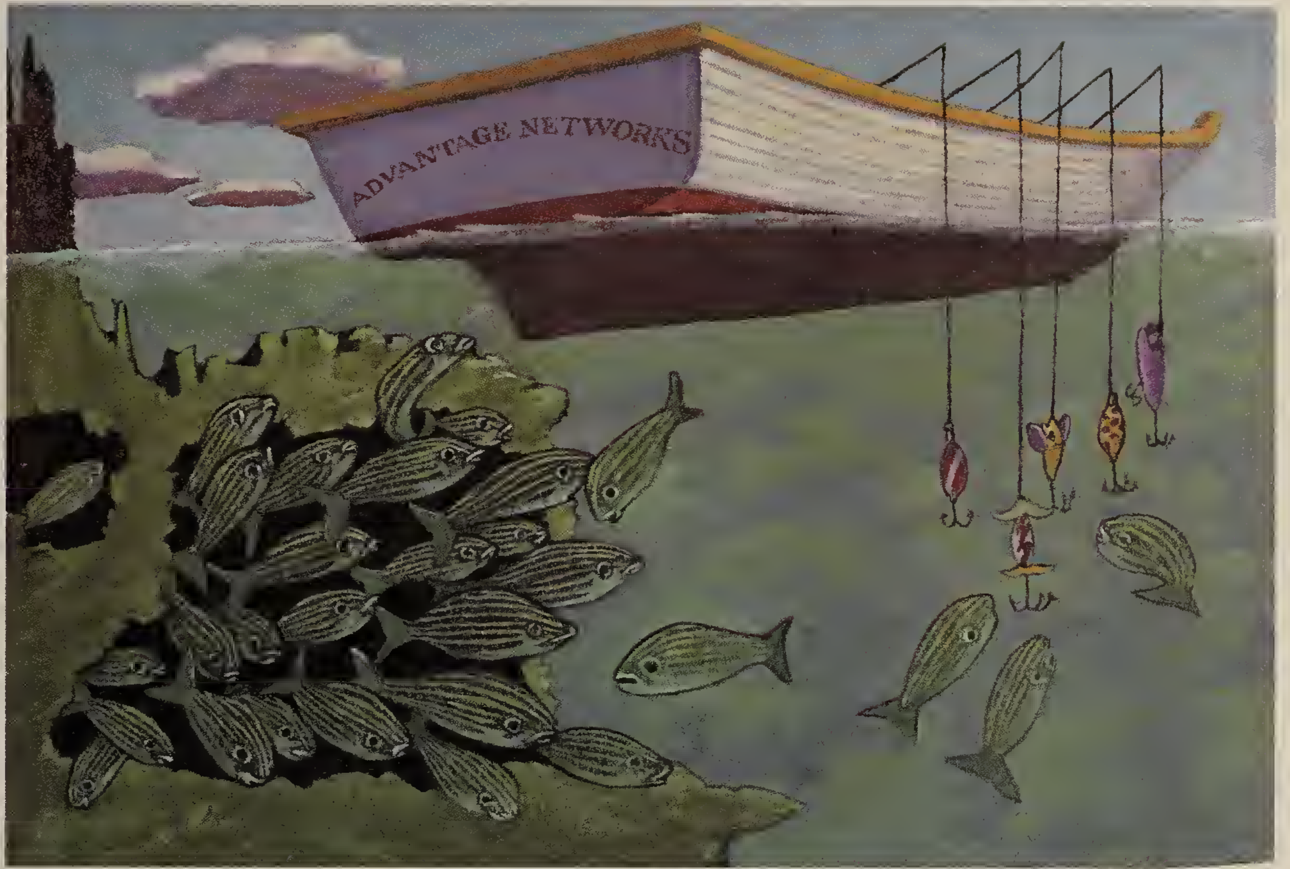
Fishing for takers

DEC has had trouble getting users to bite on its Advantage Networks bait; net managers point to kinks in DEC's product line.



By JIM DUFFY

The Fermi National Accelerator Laboratories in Batavia, Ill., is migrating to Digital Equipment Corp.'s Advantage Networks, DEC's latest iteration of DECnet, because it has run out of address and routing space with DECnet Phase IV.

"Our chief motivation is one of manageability in terms of addressing, routing and naming," says Phil DeMar, a network analyst at Fermi. "We've long ago overgrown the bounds of DECnet Phase IV, and we've had to do some really ugly things just to keep the network running. So we have a very strong incentive to get to [Advantage Networks] and the larger addressing and routing spaces that are available."

Some users share DeMar's assessment of Advantage Networks, but many, such as glass-making giant Corning, Inc., are content with their Phase IV networks. Corning links 1,500 DEC VAXes, 25,000 personal computers, a few thousand Apple Computer, Inc. Macintoshes, DEC and Sun Microsystems, Inc. workstations, 750 DEC PDP processors and three mainframes over its DECnet backbone. Connections are maintained, files shared, printers and databases accessed, and just-in-time manufacturing processes run as smooth as, well, glass.

So there's no reason for Corning to implement Advantage Networks.

"It really doesn't add any value to DECnet Phase IV," says Al Grosser, a communications consultant for Corning.

42% of Digital Equipment Corp. users have made a strategic commitment to Novell, Inc.'s NetWare as their PC network operating system, according to an International Data Corp. survey of 250 DEC sites. 24% have chosen Pathworks.

Advantage Networks, previously referred to as DECnet Phase V, merges the proprietary protocols of DECnet Phase IV with Open Systems Interconnection and Transmission Control Protocol/Internet Protocol stacks. The protocol suites are configured as "towers," meaning they share the same physical- and data-link control layers but then split off into their respective network, transport, session, presentation and application layers.

The tower approach is designed to allow applications such as file transfer and terminal emulation to communicate using any one of the three protocols.

Advantage Networks is the key component of DEC's multivendor enterprise networking strategy to interconnect desktops, local-area networks and legacy networks, such as IBM's Systems Network Architecture, and provide integrated management of the environment.

While Advantage Networks may be attractive to DECnet users with large nets, like Fermi Labs, that have run out of gas with Phase IV, other DECnet users see little benefit in moving unless they plan to migrate to OSI.

"We know we need to go [to Advantage Networks] because we do so much government work," says Tim Thompson, computing and network services manager at Teledyne Brown Engineering in Huntsville, Ala. "[Government OSI Profile] compliance is going to catch us sooner or later."

GOSIP is a set of specifications for U.S. government computer and data communications procurements that mandates OSI compliance.

Guilt by association

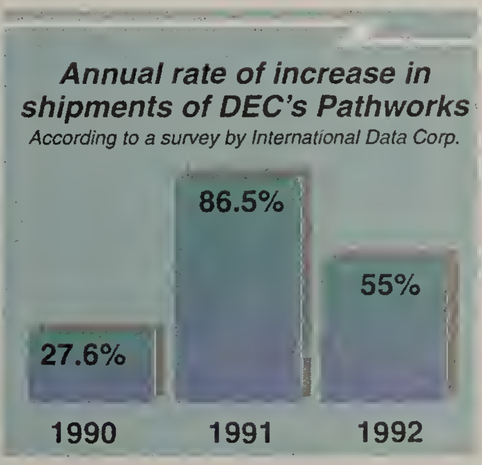
Analysts see little movement among DECnet Phase IV users to Advantage Networks. One reason, according to analyst Rick Villars of market research firm International Data Corp. in Framingham, Mass., is that Advantage Networks is based largely on adoption of OSI for multivendor networking. The problem with that is few companies today are embracing OSI for multivendor networking; they're using TCP/IP instead.

Advantage Networks, therefore, suffers from guilt by association, Villars says.

Scott Barielle, a consultant with ISA Consultants, Ltd. in Chicago, agrees with Villars.

"There's really no business reason to [migrate to Advantage Networks] yet," Barielle says. "If users choose not to use Phase IV, they'll choose TCP/IP. DECnet/OSI would only make sense if the vendor on the other side had an OSI-compliant net. Very few American companies have a problem with using a proprietary vendor network. If it works, why change it?"

Another reason is that DECnet/OSI for VMS Version 5.5, which comprises the DECnet and OSI portions of Advantage Networks, only started shipping last month. That's five months later than originally planned. So the vast majority of DEC users couldn't migrate earlier even if they wanted to.


Annual rate of increase in shipments of DEC's Pathworks

According to a survey by International Data Corp.

DECnet/OSI for VMS Version 5.5 allows VMS systems to share data with other OSI-compliant systems via OSI protocols and other DECnet nodes via DECnet.

DECnet/OSI for Ultrix, meanwhile, began shipping in June 1991. But users of Ultrix, DEC's implementation of the Unix operating system, are only a fraction of the company's installed base of users.

Why did DEC release DECnet/OSI on Ultrix, the installed base of which is minis-

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Ralph Ungermann

Ralph Ungermann
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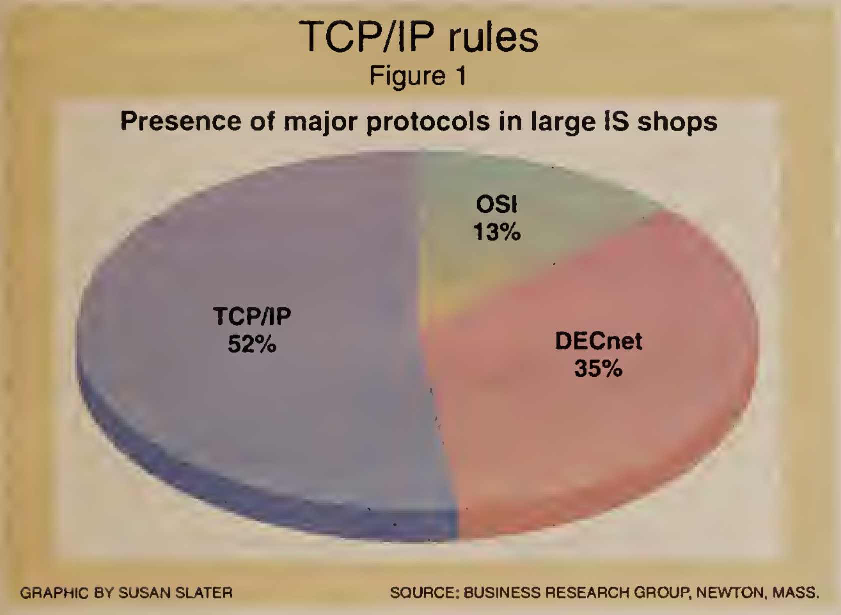
(continued from page 53)

cule compared to VMS, long before the VMS version was available?

DEC officials say DECnet/OSI development was quicker on Ultrix than on VMS, so the product came out on Ultrix earlier. But users and analysts suspect it's because DEC recognized that, at the moment, OSI appeals only to European users. And those European users are also demanding standard system platforms, such as Unix.



TCP/IP rules
Figure 1

GRAPHIC BY SUSAN SLATER SOURCE: BUSINESS RESEARCH GROUP, NEWTON, MASS.

"OSI is making inroads faster there," says Teledyne Brown's Thompson. "I think they've standardized more on Unix there. It just kind of went hand in hand."

Indeed, Jeffrey Low, DEC's director of Enterprise Networks Marketing, says the company's international user base is migrating very quickly to DECnet/OSI. Other DEC officials maintain that North American users are migrating as well, and they point to Fermi, The Dow Chemical Co., the Lawrence Livermore National Laboratory and unidentified government users.

DEC officials have declined, however, to disclose how many Ultrix or VMS DECnet/OSI licenses DEC has sold in Europe or North America.

North American users, meanwhile, have standardized on TCP/IP for their multivendor networking. That includes DEC Ultrix users when they're not using DECnet. TCP/IP comes bundled with every Ultrix license.

TCP/IP is the predominant networking protocol in large North American information systems shops, according to a study of 300 of the largest 1,000 U.S. firm sites conducted by Business Research Group of Newton, Mass. (see Figure 1, this page).

Even though TCP/IP is one of the protocol towers in the Advantage Networks suite, migration to TCP/IP from DECnet is not a compelling reason for users to license Advantage Networks. TCP/IP is already included in every Ultrix license, and current Phase IV users can also license TCP/IP Services for VMS, software that allows VMS systems to support such TCP/IP services as Network File System, Telnet terminal emulation, the Simple Mail Transfer Protocol and the File Transfer Protocol (FTP).

So, users contend, Advantage Networks provides nothing above and beyond what they can get from DECnet Phase IV and TCP/IP Services, except for OSI. And most of them aren't interested yet in OSI.

Had DEC paid heed to the TCP/IP masses, instead of chasing the OSI phantoms when it was developing DECnet Phase V, its multivendor networking strategy might have been taken more seriously.

"DEC has to fully, once and for all, understand that it must provide TCP/IP functionality and management," says Leslie Maltz, director of computer and communications resources at Stevens Institute of Technology in Hoboken, N.J. "The customers demand and need TCP/IP from all angles. That's probably an area where they've not been always listening to what the market was driving them to."

Although DEC provides the TCP/IP Services product, users say it runs as a parallel stack to DECnet/OSI, meaning they have to expend extra compute resources to run DECnet/OSI and TCP/IP Services. If TCP/IP were integrated into the DECnet/OSI stack, it would simplify things by saving compute resources.

Moreover, users that opt for DEC Management Control Center (DECmcc) Director to govern DECnet, OSI and TCP/IP have to purchase one Access Module to manage DECnet and OSI nets and a separate Access Module to manage TCP/IP networks.

Access Modules are interfaces to the DECmcc Director from managed networks and systems.

But users can purchase a different DEC product if they want to manage only TCP/IP and DECnet Phase IV nets — the Polycenter SNMP Manager 300. It supports Simple Network Management Protocol SET, SHOW and TRAP commands, as well as DEC's Network Information and Control Exchange protocol for managing DECnet Phase IV nodes.

It does not support DECnet/OSI.

Mary Ellen Fortier, DEC's Advantage Networks marketing manager, says DECnet/OSI and TCP/IP are integrated at the application layer. This allows users to select either OSI's FTAM, TCP/IP's FTP or DEC's Data Access Protocol for file transfer, and OSI's Virtual Terminal Protocol, TCP/IP's Telnet and DEC's Cterm protocols for terminal emulation.

But Fortier acknowledges that integration between DECnet/OSI and TCP/IP could be tighter.

"The applications are far more integrated than the lower transport layers are today," she says. "However, if we look at what our customers need and are writing to, the applications are the things they see first and are most important [to them]."

Undaunted, DEC forges ahead with its Advantage Networks strategy, filling gaps in its TCP/IP product suite while enhancing the DECnet and OSI components.

Vulnerable position

This year, DEC unveiled a slew of products and marketing alliances to push the Advantage Networks message out to its constituency (see Figure 2, this page). But at the same time, DEC hasn't faced a more vulnerable position from which to compete.

DEC history was made this year when Kenneth Olsen, the company's founder and only president in its 35 years of existence, was forced out by the board. In Olsen's stead, the board installed Robert Palmer, who has only been with the company since 1985 (see "DEC users fear impact of cost cuts on R&D," page 60).

In order to stem the flow of red ink, Palmer has pledged to reduce DEC staff by as many as 20,000 positions, mostly in engineering, during the next two years.

While not addressing its specific impact on the Networks and Communications division, DEC's Low says the cutbacks will leave DEC "a stronger, well-tuned company poised to develop and deliver the most competitive products in a timely fashion."

Yet DEC users wonder if their principal vendor can rebound and become the computing and networking powerhouse it was in the 1970s and most of the 1980s. Until then, their only solace is in the products and alliances DEC is forging to buttress its Advantage Networks strategy.

The products and alliances mainly impact three key areas deemed strategic by DEC: PC and LAN integration with DECnet backbones, IBM SNA integration, and network management.

PC partners

Probably DEC's most significant maneuver in PC and LAN integration came in November 1991, when it announced an expansion of its relationship with PC systems software giant Microsoft Corp. DEC says it will develop office productivity software — commonly known as group collaboration software, or work group computing software — to link Microsoft's popular Windows client workstations into DEC All-In-1 office environments.

> "DEC has to fully understand that it must provide TCP/IP functionality and management."
>
> ▲▲▲

The office productivity suite, called TeamLinks, uses DEC's Pathworks LAN operating system, which is based on Microsoft's LAN Manager, to launch Windows clients into enterprise-wide All-In-1 networks. Pathworks supports DECnet and TCP/IP protocols.

At the same time, Microsoft said it would develop future versions of its Word for Windows and Excel for Windows applications to DEC's Network Application Support (NAS) interfaces. NAS is a set of application program interfaces (API), based on industry standards and DEC proprietary technology, including DECnet, that enables software developers to build distributed applications for sharing information in a multivendor network.

Then in April, DEC and Microsoft took that activity even farther. The companies agreed to align NAS with Microsoft's application integration architecture, the Windows Open Services Architecture.

This effort is aimed at establishing common APIs that will enable a single application to run over Microsoft's Windows NT and DEC's NAS-compliant operating systems, including VMS and the Open Software Foundation, Inc.'s (OSF) OSF/1.

DEC also delivered a one-two punch to shore up its LAN product portfolio.

First, it announced an agreement with Novell, Inc. to develop a version of Pathworks that will include native NetWare file-and-print services. DEC provided few details on the new product's functions, but analysts say the new version will allow DOS clients to access NetWare file-and-print services and Pathworks, DECnet and TCP/IP electronic mail, terminal emulation and wide-area services from the same DEC server.

Analysts say they believe the new Pathworks version will offer tighter integration between NetWare and DECnet environments.

"When [the NetWare version

(continued on page 60)

DEC's 1992 networking product announcements
Figure 2

Product	Announced	Availability
TeamLinks groupware for Microsoft Corp. Windows	November 1991	September
Etherworks Router/DECnet Version 1.0	January	Now
DECserver 700, MUXserver 320 and 380, DECserver 90L+	January	Now
DECnet/OSI for VMS Version 5.5	February	November
Version of Pathworks with NetWare file and print services	February	First quarter 1993
DECtp Desktop for ACMS Version 1.1	February	Now
DECmcc Director Version 1.2	April	Now
DEC WANbrouter 90	May	December
SNA Domain Gateway for Channel Transport	May	August
SNA 3270 Application Services	May	December
TCP/IP Services for OpenVMS	July	Now
Polycenter SNA Manager 1.0, Solve:Connect for EMA	September	Now
DECNIS Version 2	October	Now
DECnet for Open VMS AXP Version 1.0	November	Now
DECnet/OSI for OpenVMS AXP	November	First half of 1993
TCP/IP Services for OpenVMS AXP	November	First half of 1993
DECnet/OSI for DEC OSF/1 AXP Version 1.0	November	March 1993
OSI applications for DEC OSF/1 AXP	November	First half of 1993
DEC X.25 for DEC OSF/1 AXP Version 1.0	November	March 1993

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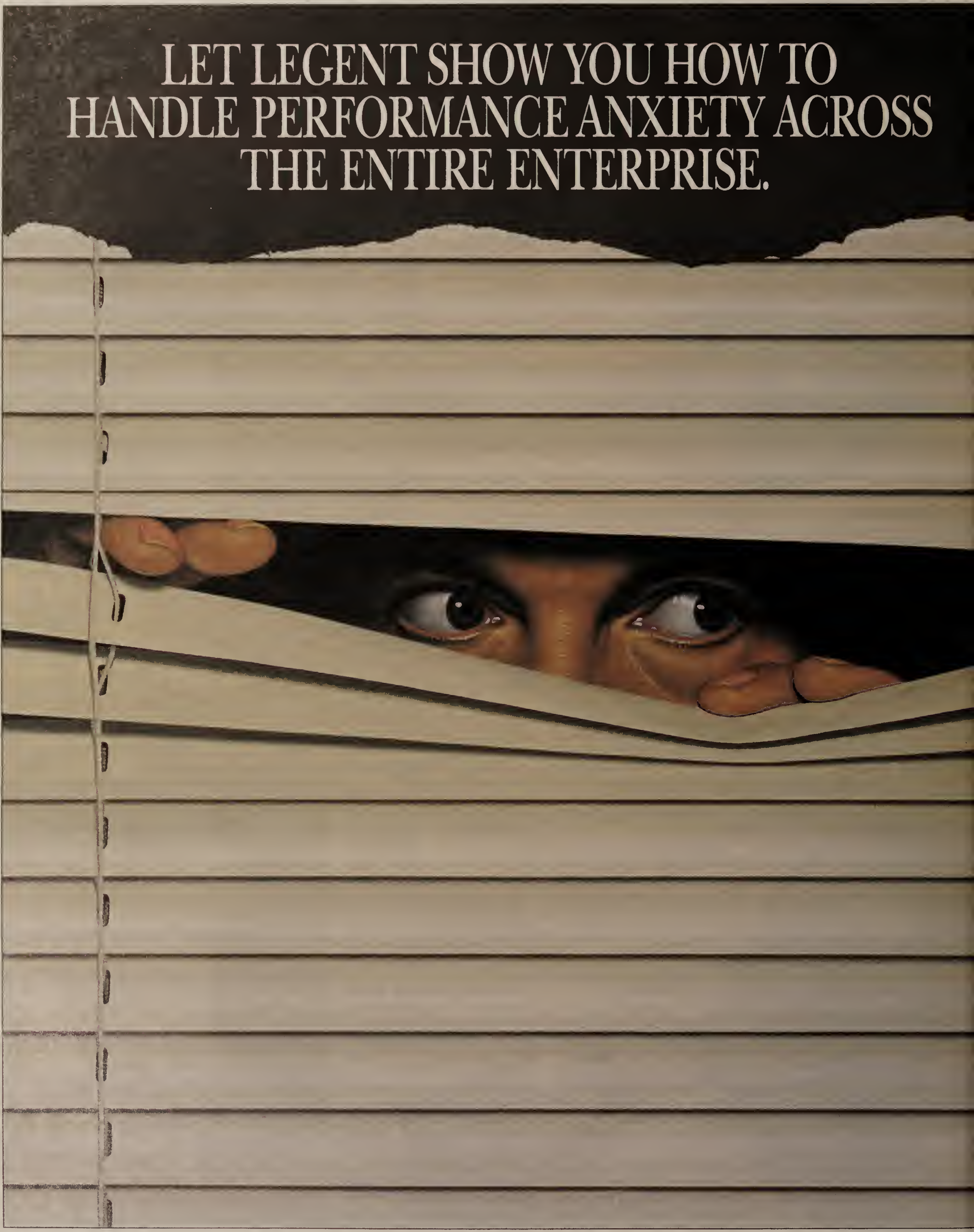
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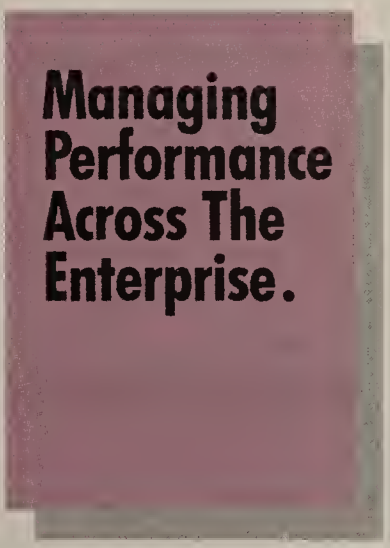

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LEGENT has licensed NaviGraph technology from Landmark Systems Corporation.

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of Pathworks] is released, then you've got a machine that is both a NetWare and a LAN Manager server simultaneously," ISA's Barielle says. "Today, there is no box that can simultaneously be a NetWare server and a LAN Manager server. NetWare users can put a terminal emulator on IPX without having to load DEC's [Local Area Transport] protocol. And they can access shareable file areas with file and record locking between different databases, which is a better example of full integration than replicating server databases."

For Pathworks and NetWare integration today, DEC offers NetWare Coexistence, a client software program that gives users access to Pathworks and NetWare servers simultaneously. NetWare Coexistence has been assailed, however, for consuming a lot of client memory.

Internetwork moves

Although DEC has announced plans to enter the low-end multiprotocol router market via an agreement with Cisco Systems, Inc., to date, DEC's array of routers primarily address complicated, and expensive, requirements.

One of those higher end routers is the DECNIS 600, a system for building multiprotocol backbone networks. DEC disclosed in October that it will route Novell's Internetwork Packet Exchange and Apple's AppleTalk protocols with the DECNIS 600.

Continuing its push to integrate DECnet with non-DEC environments, the company also released a new version of its Application Control and Management System (ACMS) with support for TCP/IP and NetWare's IPX protocol, The Santa Cruz Operation Inc.'s SCO Unix, and DEC Ultrix- and VMS-based clients. ACMS is client software that allows LAN-attached microcomputers to access and execute transaction processing applications on a VMS host.

Prior to this release, ACMS supported only DECnet protocols and MS-DOS, Win-

(continued on page 62)

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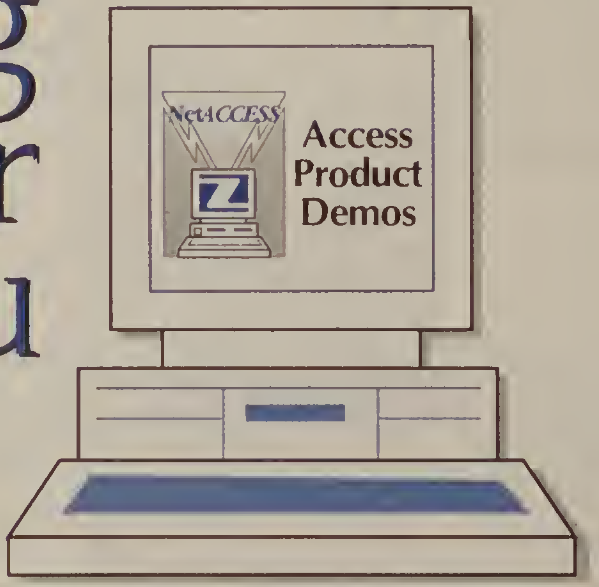

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DEC users fear impact of cost cuts on R&D

The quality of a vendor's products, services and support are always important to buyers, but the chief concern among DECnet users these days is the viability of Digital Equipment Corp.

Given its bleak financial showing of late, users just don't know if the company will be the computing and networking powerhouse it once was. DEC lost $2.8 billion in fiscal 1992, prompting the ouster of founder Kenneth Olsen, who, until recently, was the company's only president and chief executive officer. DEC also slashed 10,000 employees from its payroll in fiscal 1992.

DEC's board of directors handpicked Robert Palmer to succeed Olsen last Oct. 1. Palmer, hardly a DEC "lifer," joined the Maynard, Mass.-based systems and networking vendor in 1985 as manager of semiconductor operations.

A sharp-dressing, straight-talking, fast-moving tactician, Palmer couldn't be more unlike Olsen. Olsen will be remembered as a lumbering, rumpled patrician known for rambling speeches and a reluctance to reduce DEC's head count as a way to cut costs.

But Palmer made it clear in his inaugural address that he's not gun-shy when it comes to cutting staff. Palmer indicated that he would cut some 20,000 positions, mostly in engineering.

DEC recently disclosed a realignment of its Networks and Communications division in an effort to make it more customer-focused and solution-oriented. That realignment is more of a marketing maneuver, however, and doesn't reflect the downsizing the Networks and Communications division might be going through.

To date, no high-profile engineers have defected from the Networks and Communications division like they have from other DEC business units. Still, DEC won't disclose how many of its 108,500 employees work in the Networks and Communications division unit nor what the target number is.

Likewise, DEC wouldn't disclose Networks and Communications' research and development expenditures nor comment when asked if R&D spending is likely to increase or decrease. Palmer, however, cited networking and open systems as two of the six areas in which DEC is focusing resources in an effort to turn the company around.

— Jim Duffy

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dows and Macintosh clients. With this latest version, ACMS is open to users of NetWare and TCP/IP networks.

Also on the TCP/IP front, DEC earlier this year announced terminal servers that connect devices on Ethernet LANs to host computers using TCP/IP or DEC's LAT protocol. DEC also unveiled a new version of TCP/IP Services for OpenVMS — a Portable Operating System Interface-compliant version of VMS — that supports some basic TCP/IP services that were absent in the previous version. Such services include SNMP agent support, support for TCP/IP over Fiber Distributed Data Interface LANs and remote printing on TCP/IP nets.

A different net view

Besides the efforts DEC has been making to address a major sore spot with users — TCP/IP support — the company has also tried to address user needs for SNA connectivity by announcing enhancements to its DECnet/SNA gateways.

It's not enough in DEC's eyes to merely emulate and integrate with an SNA network.

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The company unveiled software for its gateways that allows IBM 3270 terminal users to access DECnet resources through transport protocol translation. DEC also unwrapped software that allows users to develop VMS applications that can communicate through a DECnet/SNA gateway with 3270 applications in an SNA network using the 3270 data stream.

The software fosters tighter integration between DECnet and SNA environments by making an attached DECnet network look like an SNA subarea to the IBM host. This allows 3270 users to establish sessions with systems in the DEC environment as if they were on the SNA network and to print ASCII on an IBM printer in an SNA network.

But it's not enough in DEC's eyes to merely emulate and integrate with an SNA network. DEC also wants to manage an SNA net.

In September, DEC and Systems Center, Inc. — the Reston, Va., maker of Net/Master, an alternative SNA manager to IBM's NetView — brought out the fruits of a two-year development effort. The companies rolled out software that allows users to manage SNA and DECnet nets from any of three consoles: NetView, Net/Master or DEC's own enterprise manager, DECmcc Director.

The software includes two DEC packages — an Access Module and a Presentation Module, in DEC nomenclature — and a program from Systems Center called Solve:Connect.

Solve:Connect resides on the NetView or Net/Master host in an SNA network and functions as a management agent. It sends alarms and alerts to DECmcc Director on a DEC VMS system using the Common Management Information Protocol running over an IBM LU 6.2 session.

On the DECnet side, DEC's Access Module defines the SNA environment for DECmcc Director. And the Presentation Module acts as the management agent for the DEC environment, enabling NetView or Net/Master to receive alarms and alerts from DECnet devices.

But DEC's network management activities weren't focused solely on SNA. DEC took the preliminary steps necessary to make DECmcc Director portable to other vendors' hardware. It also zeroed in on broader management of TCP/IP networks.

DEC unveiled a version of DECmcc Director for Ultrix-based platforms, the first to run on non-VMS processors.

According to DEC, DECmcc Director will be tuned over time to run on the OSF/1 operating system and, therefore, on OSF/1-based platforms from other vendors. Italy's Ing. C. Olivetti & Co., S.p.A. is already porting DECmcc Director to Unix System V Release 4, which opens up that installed base of systems to the management platform. Olivetti's port will be completed in January, according to DEC officials.

Concurrent with the Ultrix release of DECmcc Director, DEC also expanded the management system's ability to govern TCP/IP networks by supporting more DEC and non-DEC Management Information Base (MIB) extensions, including the Remote Monitoring MIB. The non-DEC MIB extensions provide information on products from Banyan Systems, Inc., Hewlett-Packard Co., Microsoft, Sun and Vitalink Communications Corp.

And there's more to come. After losing out to HP in the race to found the OSF's Distributed Management Environment (DME), DEC has promised that DECmcc Director will be DME-compliant within six months after the DME interfaces are published.

Users, however, see application developers rallying around competitive platforms from HP and Sun. With applications dictating the viability of their network management platforms, this trend does not bode well for DECmcc Director.

"What it really lacks is the third-party commitment at the application layer," says Charles Lukaszewski, chairman of Network Strategies Group, a Minneapolis consultancy. "The problem is they're facing stiff competition from [HP's] OpenView and, to a lesser extent, from SunNet Manager. These are the two platforms that I see all the upcoming hot network management applications being written to. There are not a lot of people who are going to buy [DECmcc Director] because it just doesn't have the market share that OpenView does."

DECmcc Director "just doesn't have the market share that OpenView does."

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Like a giant steamer turning 180 degrees in a narrow river, DEC is slowly responding to the networking needs of its users. The company thought it had a jump on the market when it decided to integrate OSI into DECnet and offer that as a growth path for DECnet Phase IV users. But DEC misread the market for TCP/IP and now has to go back and fill in the missing pieces in its TCP/IP product line.

But some other tough questions remain. If OSI never achieves critical mass in the market place, what becomes of DECnet/OSI and, hence, the Advantage Networks strategy? Will DEC continue to be haunted by its neglect of TCP/IP and relegated to playing catch-up in that market?

Will DECmcc Director ever gain the popularity among application developers that OpenView and SunNet Manager enjoy in the network management arena? If not, what then becomes of the current DECmcc Director installations and how will they move forward? Will DME compliance be enough to keep DECmcc Director in the fray?

And, finally, will DEC ever emerge from the financial doldrums that plague the company today? Or will DEC wither away like its brethren along Massachusett's Route 128 and become merely a ghost of its former essence?

"It's not that I'm concerned whether DEC will be there," says Corning's Grosser. "It's more of what DEC will look like. I'm concerned about that impact on developing new products and a lack of communication between DEC and its customers."

Resolution of these issues will determine whether DECnet users can steam ahead with the vendor or be forced to abandon ship.

Duffy is a senior editor at Network World.

Users contend with flurry of issues

Digital Equipment Corp. has long been assailed for its fly-by-night personal computer strategy. Indeed, one can hardly reminisce about the days of DEC Founder and former President Kenneth Olsen without recalling how he shrugged off the emergence of the PC and dismissed Apple Computer, Inc.'s Macintosh as a mere toy.

DEC finally recognized the importance of PCs in networking, however, when it aligned with Apple in 1988 to develop Pathworks, a LAN Manager-based network operating system that connects DOS, OS/2, Macintosh, Ultrix and VMS clients on Ethernet local-area networks to VMS and Ultrix servers using Transmission Control Protocol/Internet Protocol and DECnet protocols.

Despite Olsen's rantings, DEC developed a serious PC networking product in Pathworks. Users and consultants say it provides far more than the usual print and file sharing services other LAN operating systems provide and that it's a functionally-rich, though expensive, integrator of desktops and DECnet backbones.

But it suffers performance degradation when used over interconnected LANs.

Consultancy Network Strategies Group (NSG) was recently called on by an unidentified user to pinpoint performance problems in a Pathworks network.

The DECnet component of Pathworks usually transmits 1,500-byte packets on Ethernet LANs.

But NSG found that when Pathworks LANs are interconnected by routers, DECnet imposes a maximum size of 576 bytes for each packet.

Net protocols change when routers are installed.

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The result is that the smaller packets move around the network much faster — 40% to 50% faster than the larger packets, according to NSG. And when they move around that fast, they tend to bombard Pathworks clients, causing the client to lose packets and, thus, actually slowing response time.

This will be problematic for Pathworks users looking to extend their LANs via routers, according to Charles Lukaszewski, chairman of NSG.

"As wide-area speeds continue to increase and people start to put routers in their local environments, you will run into this problem," he says.

NSG found the packet flurry problem to be in the newest Pathworks release, Version 4.1.

"We established definitively that the problem is in the [Pathworks] client," Lukaszewski says. "It's not dependent on code up in the Pathworks server. It happens with anything that you would want to do with DECnet on a PC. If you switch transport protocols [to Novell, Inc.'s IPX or to the IP], in theory, it goes away."

Katrina Holman, DEC group manager of PC integration marketing, says DEC assisted NSG in pinpointing the problem. She contends, however, that DEC officials did not find Pathworks at fault.

Problems such as these, Holman says, are often caused by a faulty network configuration.

The behavior of a lot of network protocols changes when routers are installed in LANs, Lukaszewski says.

So what did the user do?

The company ended up scrapping Pathworks and installing Novell's NetWare in its place.

— Jim Duffy

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PC price war isn't all good news

continued from page 1

stay the same proportionally," he said.

Home Box Office of New York has been able to convince its network adapter card supplier to keep its prices in line with PC prices, a spokeswoman said. HBO has been buying high-performance PCs for about $1,500 and Ethernet adapters for $180, she said.

What's more, Graham Morrison, project leader for network design and engineering at Blue Cross and Blue Shield of Connecticut in North Haven, Conn., said users deploying high-performance PCs snapped up at low prices may pressure vendors to offer more functionality in their products.

"I expect users to be more aggressive about asking for antivirus software, various drivers and other added functionality from their card vendors," he said.

Spurred by low-cost entries from IBM, Compaq Computer Corp. and Dell Computer Corp., among others, PC prices have fallen 12% to 40% this year across most PC categories, said Brian Clarke, an industry analyst at International Data Corp., a market research firm in Framingham, Mass. In particular, shipments of high-end PCs destined to be networked have surged.

"The price wars have had a favorable effect on the overall network industry as a vast majority of the PCs being sold are networked PCs," said Eric Benhamou, chairman, president and chief executive officer at 3Com Corp., a Santa Clara, Calif., network equipment vendor.

3Com and other adapter card vendors have been among the biggest network industry winners in the PC price war, but they may soon rue it, Dagres said. While prices have already fallen on some network products, there's a good chance users will force adapter card vendors to sacrifice more of their healthy profit margins, which typically fall in the 40%-to-50% range, he said.

Dell's 18-PC product barrage last week highlighted how out of sync the prices of PCs and adapters have become. Dell introduced 80486-based PCs starting at $1,200. That compares to token-ring adapters that sell for between $450 and $900, Ethernet adapters priced between $200 and $400, and Fiber Distributed Data Interface adapters that can cost as much as $3,000.

Even vendors acknowledge that prices could be squeezed. "As PCs get lower in price, there has to be a balance for how much people are going to pay for add-in and peripheral devices," said Nate Kalowski, vice-president of marketing at Proteon, Inc., a Westborough, Mass., network equipment vendor. "You can't all of a sudden have the peripheral price terribly out of line with the workstation price."

However, Kalowski said Proteon has yet to feel any pricing pressure due to the PC war.

Suzanne Lynn, senior product administrator for LAN systems marketing at IBM in Atlanta, says the company is keeping a close eye on PC prices. "As PC prices come down and users spend almost as much for an adapter as a PC, there may be some downward [price] pressure," she said.

Guy Hoffman, a vice-president at Eicon Technology Corp., a Dallas vendor of PC-to-mainframe gateway cards, said it is get-

Letters

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lesser skilled workers to perform tasks that had required highly trained persons.

The payoff in terms of productivity and customer service level improvements is very real. Retailers have been able to reduce verification of prices on the store shelf from a multiday activity to one that consumes less than two hours. Distribution centers have achieved inventory accuracy levels that reduce or eliminate the need for cycle counting. Improvements in asset management have saved companies literally millions in asset control.

The major advantage of a radio LAN is that it serves as the means for connecting a freely roaming, radio-based, hand-held terminal to a conventional wired LAN or wide-area network. This combined, multimedia communications link is what enables the terminal operator to function under the control of the appropriate application program at the very scene where a business transaction is happening.

The ramifications, in terms of market potential, are enormous. Conceivably, 20 million IBM 3270s could be replaced by radio-based, portable terminals operating in a portable interactive data processing mode. In time, these transaction-based radio LANs will be enhanced to provide document processing capabilities.

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ting more challenging to sell even an entry-level card that costs $1,500.

"The perceived value of technology is decreasing significantly in the eyes of the user," Hoffman said. "After all the wheeling and dealing in the PC market, it's difficult to sell the value of networking and internetworking, even though these technologies are more complex and have higher support and development costs."

Internetworking players such as Cisco Systems, Inc. and Chipcom Corp. said they have not felt any pricing pressure due to events in the PC market.

A Cisco spokesman said the deployment of more high-end PCs will, over the long run, boost internetworking needs and deployment of distributed applications and that should generate new business at Cisco.

Despite the prospect of price pressure, network vendors said the PC price war has been a boon.

Steven Schmid, director of product marketing for Ethernet products at Standard Microsystems Corp., a Hauppauge, N.Y., vendor of adapter cards and other networking gear, said the PC price war contributed to the Ethernet LAN market being "significantly larger in '92 than anyone expected."

In a recent report, Salomon Brothers, Inc. analyst Danielle Danese wrote that the "recent price erosion in PC hardware will only hasten the trends that we foresee" in network deployment.

"Users' budgets were set at the start of the year, and when PC prices went down, it made for more dollars to go around for other areas, like networks," she said in an interview with *Network World*.

Ron Hardy, director of marketing at MAXM Systems Corp., a Vienna, Va., systems and network management software supplier, said the price war has been a blessing for his company, whose software runs on Unix and OS/2 machines. Last year, users typically installed only six or seven MAXM clients, whereas today they are generally installing more than 10.

Hardy attributes that partially to the lower cost of the PCs. Also, MAXM is looking more attractive to many users that are running it on 80486-based machines, which enable the software to perform more functions, he said. ☑

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Superserver mart casualty of price war?

While many network vendors have benefitted from the PC price war, at least one group of suppliers may be wishing the price war hadn't started.

Stan Schatt, a senior industry analyst at market researcher InfoCorp in La Jolla, Calif., said users are grabbing high-end personal computers at low prices and installing them as servers instead of making the jump to superservers. Although the superserver market is growing, high-end PC sales are offsetting what could be even greater growth, he said.

InfoCorp's survey of users representing 1,000 sites found 62% of them had PC servers, 29% had system-based servers and 9% had superservers. When asked what they were doing for servers in 1993, InfoCorp found that 82% planned to buy PC servers; 14%, superservers; and 4%, systems-based servers.

A spokeswoman for NetFRAME Systems, Inc., a Milpitas, Calif., superserver vendor, said her firm's sales are strong and have not been negatively affected by the PC price war.

Mark Garver, vice-president of strategy at Tricord Systems, Inc., a Plymouth, Minn., superserver vendor, also said sales are up. Those users seeking fault tolerance and large disk capacity are opting for superservers, he noted.

"I think the companies really feeling the pressure are those that claim to have superservers but are really selling PCs on steroids," he said.

Aside from any problems it raises for superserver makers, the PC price war may also be delaying entire network projects at some user sites.

Glenn Russo, senior vice-president of sales and marketing at Bridgeworks Integration, Inc., a network integrator in Houston, said the PC price war has created decision gridlock. "We've had people ready to make projects happen, and then say, 'Hold on!' because they want to wait for the PC prices to come down a little more," Russo said. "The prices are going down so fast and furious that it's tough for them to make a decision on desktops and servers."

— Bob Brown

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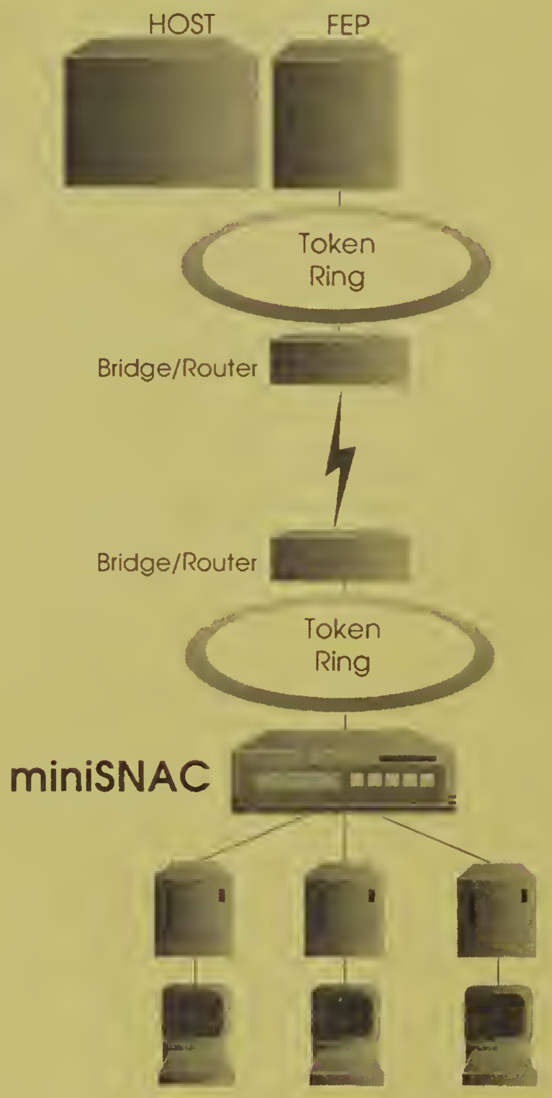

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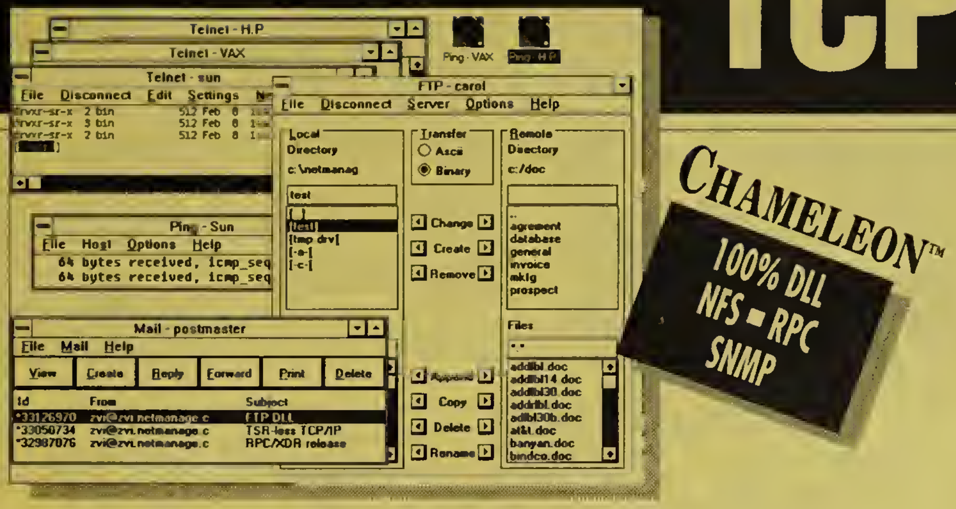

```
rwxr-sr-x  2 bin        512 Feb  8
rwxr-sr-x  3 bin        512 Feb  8
rwxr-sr-x  2 bin        512 Feb  8
```

```
  64 bytes received, icmp_seq
  64 bytes received, icmp_seq
```

```
test
[..]
[test]
[tmp drv]
[-a-]
[-c-]
```

```
..
agrement
database
general
invoice
mklg
prospect
```

```
addlbl.doc
addlbl14.doc
addlbl30.doc
addrlbl.doc
adlbl30b.doc
at&t.doc
banyan.doc
bindco.doc
```

```
Id         From                   Subject
*33126970  zvi@zvi.netmanage.c    FTP DLL
*33050734  zvi@zvi.netmanage.c    TSR-less TCP/IP
*32987076  zvi@zvi.netmanage.c    RPC/XDR release
```

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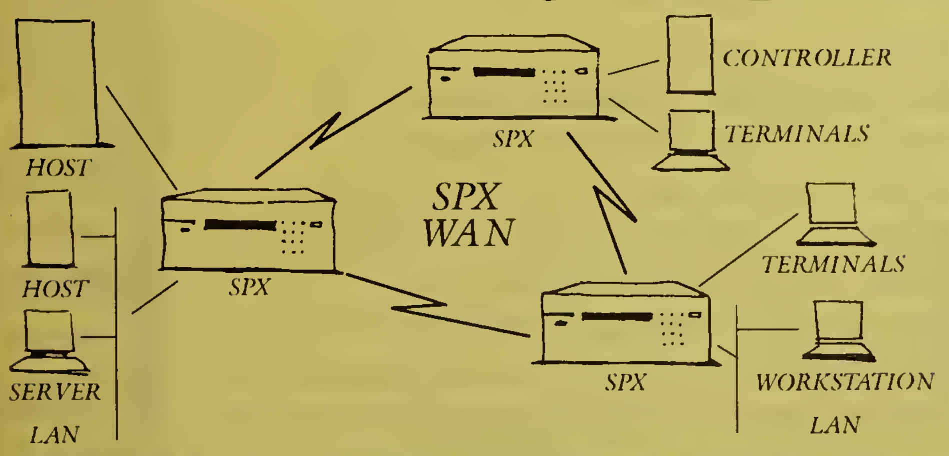

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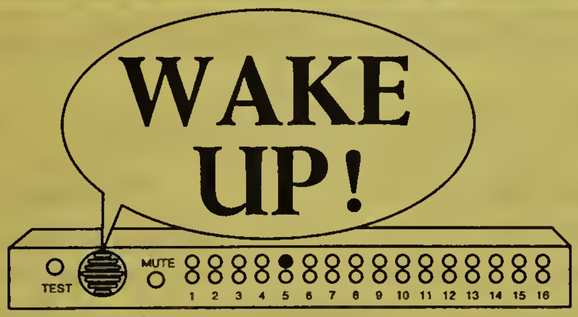

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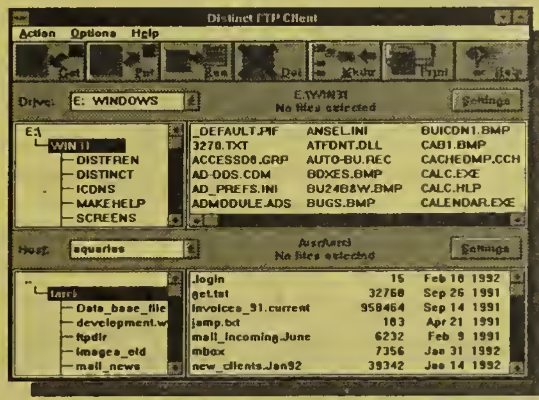

```
E:\
 WIN31
  DISTFREN
  DISTINCT
  ICONS
  MAKEHELP
  SCREENS
```

```
_DEFAULT.PIF     ANSEL.INI        BUICON1.BMP
3270.TXT         ATFONT.DLL       CAB1.BMP
ACCESS08.GRP     AUTO-BU.REC      CACHEDMP.CCH
AD-DOS.COM       BOXES.BMP        CALC.EXE
AD_PREFS.INI     BU24B8W.BMP      CALC.HLP
ADMODULE.ADS     BUGS.BMP         CALENDAR.EXE
```

```
..
 /usr/
  Data_base_file
  development.w
  ftpdir
  images_old
  mail_news
```

```
.login                    15   Feb 18 1992
get.txt                32768   Sep 26 1991
invoices_91.current   958464   Sep 14 1991
jamp.txt                 183   Apr 21 1991
mail_incoming.June      6232   Feb  9 1991
mbox                    7356   Jan 31 1992
new_clients.Jan92      39342   Jan 14 1992
```

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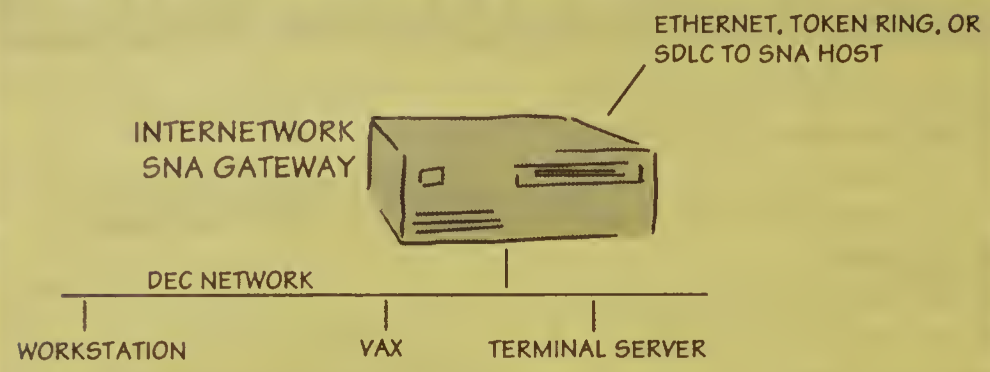

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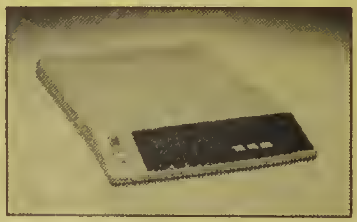

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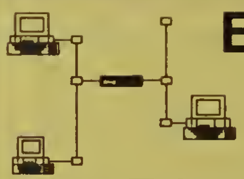

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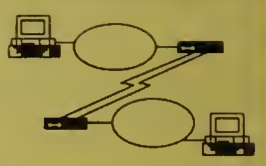

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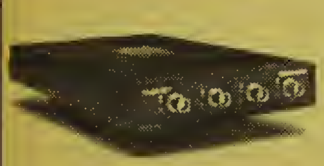

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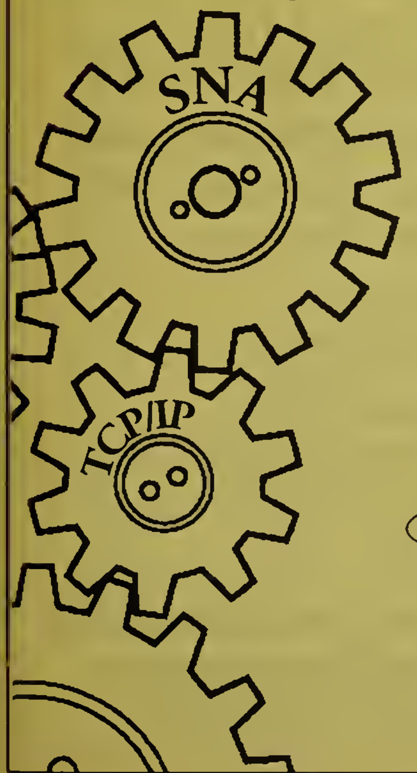

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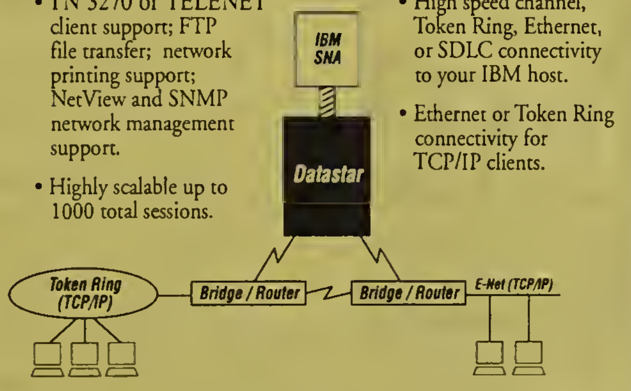

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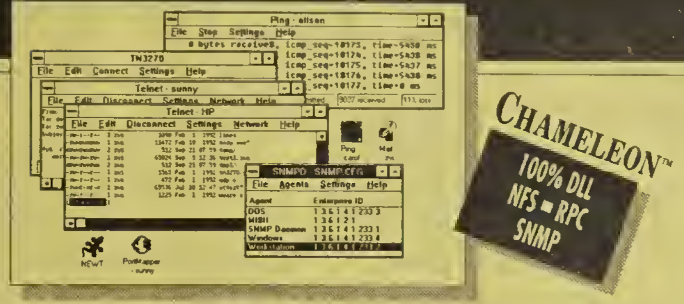

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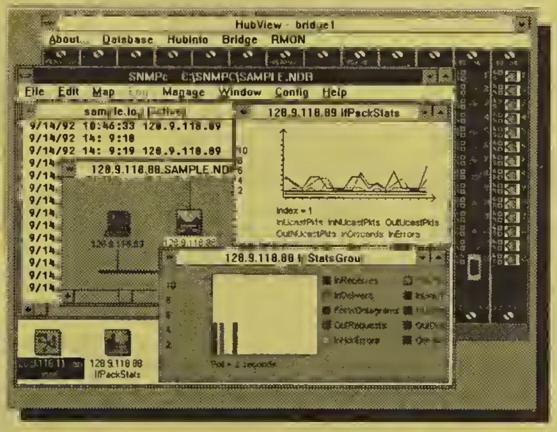

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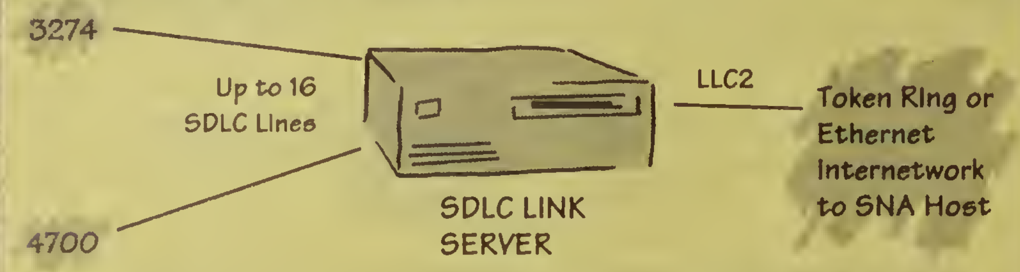

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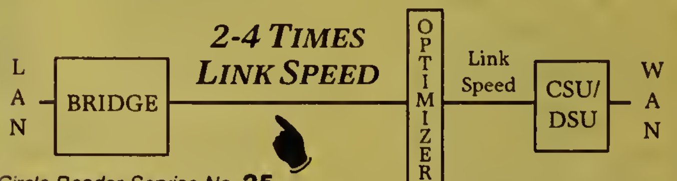

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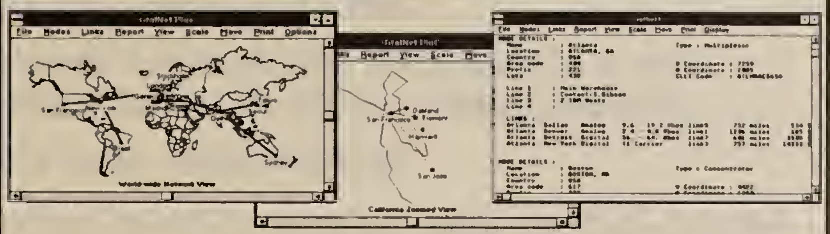

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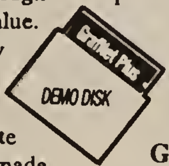

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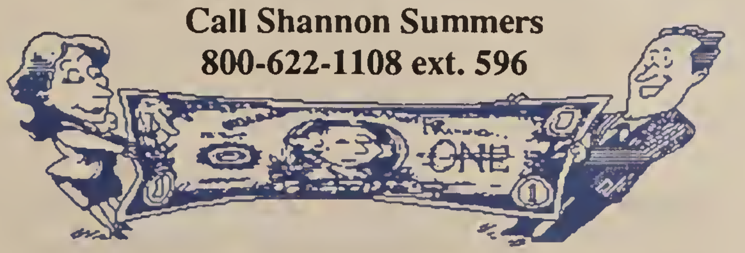

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Company expands data access horizons

continued from page 1

clients are attached to NetWare servers, it is critical for IBI to provide NetWare support under EDA/SQL.

"Novell is the last major vendor to come under the EDA/SQL banner. This makes IBI the Rosetta stone of hooking clients to data," said Jeff Tash, president of Database Decisions, a market research and consulting firm in Newton, Mass.

According to sources, Novell and IBI will announce two products — EDA Gateway for NetWare and NetWare Router for EDA — that will enable NetWare servers to act as a gateway to EDA/SQL services on other platforms.

Both EDA Gateway for NetWare and NetWare Router for EDA will run on NetWare servers and allow NetWare clients to access local NetWare databases as well as remote EDA/SQL-supported data sources.

The difference between the two products lies in the application program interface (API) used by client applications to access NetWare and other databases. EDA Gateway for NetWare allows client applications written to IBI's EDA/SQL API to access Novell's Btrieve and NetWare SQL databases on local NetWare servers and remote EDA/SQL-supported data sources. There are more than 100 commercially available applications and tools that incorporate the EDA/SQL API.

In contrast, NetWare Router for EDA allows client applications written to Novell's NetWare SQL API to access the same local and remote data sources. That API is currently incorporated into 80 commercially available applications and tools. The NetWare Router for EDA passes client SQL requests intended for remote databases to the EDA Gateway for NetWare, which sends them to remote EDA/SQL servers on other platforms.

EDA/SQL servers — which are currently available on IBM mainframe, DEC VAX, OS/2 and several Unix platforms — determine the network location of data, pass SQL requests to data sources and perform necessary data translations.

IBI and Novell are also expected to announce their intention to develop a NetWare Loadable Module version of EDA/SQL, which would improve performance by allowing NetWare servers to function as full-fledged EDA/SQL servers instead of gateways to EDA/SQL services.

EDA/SQL gets its CICS

IBI will announce it has reached another critical milestone in the form of EDA/SQL support for IBM CICS transaction processing applications running on IBM MVS mainframes.

Version 2.1 of EDA/SQL will include an API that lets CICS applications access any EDA/SQL-supported database via EDA/SQL servers on remote platforms, such as DEC VAXes or Unix processors. The server routes SQL queries to the appropriate database and returns data to the CICS client application in the proper format.

This is the first time EDA/SQL will directly support CICS or any transaction processing monitor, said John Senor, vice-president of IBI's Enterprise Data Access Division in New York. Providing EDA/SQL for CICS opens up CICS applications to a much wider range of data, he added.

"Our customers were pushing us to offer CICS support," he said.

New hub routing

IBI also announced that EDA/SQL server software will now run on five additional Unix platforms: Sequent Computer Systems, Inc. Unix processors, Pyramid Technology Corp.'s MIServer S series, DEC's RISC Ultrix, NCR Corp.'s 3000 series and Data General Corp.'s AViiON.

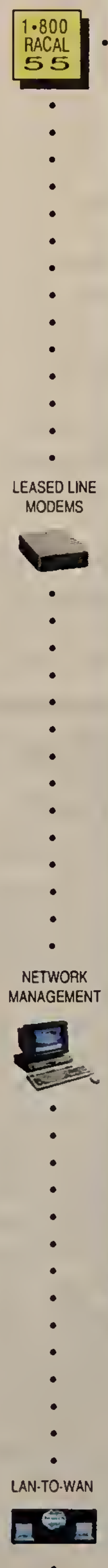
These servers, along with the DEC VAX, now support a routing feature that enables the servers to pass along client SQL queries to other EDA/SQL-supported databases on a network.

Previously, only EDA/SQL mainframe servers supported this routing feature. Porting it to the new machines gives users more flexibility when building networks and allows Unix and VAX systems to act as hubs that provide clients with access to remote data sources.

"This hub routing facility supports an emerging network-centric data architecture that lets companies place data closer to users that want it as well as ease traffic on the network," Senor said.

Finally, IBI and DEC plan to announce that EDA/SQL will support DEC's Accessworks, significantly extending the number of databases available to Accessworks users.

Accessworks, which runs on a VAX server, provides users on Apple Computer, Inc. Macintoshes, DOS, Microsoft Corp. Windows, OS/2, Sun Microsystems, Inc. SPARCstations, Ultrix and VMS machines access to databases, including Oracle Corp.'s Oracle Server, IBM's DB2 and VSAM files, and DEC's Rdb and RMS. ◻



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IBM girds token ring

continued from page 1

IBM is also developing a 32-bit token-ring adapter tailored specifically to support bandwidth-intensive multimedia applications.

IBM defines multimedia traffic as time-constrained applications, such as full-motion video, in which the voice and image must be synchronized and delivered at a set speed.

The paper concentrated on video delivered from a server and played back at a client workstation but stated that other applications, such as real-time video, could also be supported.

Network Transport/2

The client/server software, called Network Transport/2, lets the LAN server track the number of concurrent multimedia sessions on the LAN and locks out session requests that would exceed the available bandwidth.

Because a typical multimedia session requires approximately 1.2M bytes of bandwidth, IBM recommends that each 16M bit/sec LAN segment support no more than 12 concurrent multimedia sessions. Once 12 sessions are active, the server locks out requests for a 13th.

IBM said multimedia files created under LAN Server 3.0 will contain an extended file attribute field that details its bandwidth requirements. When a user opens a multimedia file, Network Transport/2 queries the extended field, determines the file's bandwidth requirements and ensures that the session stays within the boundaries specified. It also ensures that the aggregate bandwidth used by all concurrent sessions, plus traditional data, does not exceed the LAN's capacity.

The software uses the Token Ring's inherent priority mechanism to give multimedia traffic priority over traditional data traffic. That tends to slow data sessions at the expense of multimedia traffic but by acceptable amounts, the white paper said.

For example, in a typical LAN configuration, IBM found that a 1M-byte data file took 1.73 seconds to transfer from the server to a client when no multimedia sessions were running. With 10 multimedia sessions running on the LAN, the same file transfer took 2.36 seconds. That is a difference of less than 0.7 seconds, "which would be barely perceptible to a user," the paper stated (see graphic, page 1).

Analysts said the scheme is not perfect but could be an inexpensive solution for some applications because it lets users employ existing LAN equipment.

"This seems like a very practical way to do it," said Michael Howard, president of Infonetics, Inc., a research firm in San Jose, Calif. "It won't guarantee bandwidth for live videoconferences, but for applications like training, that play back video from a server, it's a viable solution."

IBM said it will beta-test Network Transport/2 with selected customers in early January.

The company also intends to announce a high-performance 32-bit Busmaster 16/4 Token-Ring adapter for Micro Channel Architecture-based Personal System/2 workstations.

The new adapter will provide throughput of more than 30,000 frame/sec for 4K-byte frames with very low latency, IBM said.

The adapter will have 32-bit addressing and data streaming support, which will enable it to access up to 4G bytes of memory directly. IBM said the adapter will also provide mechanisms for prioritizing frames and will be able to gather ring performance statistics such as utilization. It will support both shielded and unshielded twisted-pair cabling.

IBM declined to disclose pricing for the products.

MFS moves ahead with ATM

continued from page 6

customers and prospects." The company reportedly has two users on-line, but it declined to name them.

MFS Datanet, which plans to install ATM switches in Atlanta, Dallas, Houston, Los Angeles and San Francisco by February.

Although the company is using Newbridge equipment in each of those cities, new market entrants have encouraged the firm to issue a request for proposal for the switches to be installed in Baltimore, Minneapolis, Philadelphia and Pittsburgh. The carrier last week received RFP responses from an array of vendors, including BBN Communications, Ericsson, GTE Corp. and Siemens Public Switching Systems, Inc.

On the carrier side, MFS Datanet had originally planned to split its traffic between two carriers on an 80%/20% basis but instead has decided to lease the entire backbone from WilTel, Fenn said.

MFS Datanet gave pricing for one version of its HLI Ethernet Interconnection offering, which provides 1.544M bit/sec of bandwidth. A New York-to-Washington, D.C. or Boston-to-New York link carries a flat leased price of $3,000 a month. New York-to-Chicago links cost $4,000 a month. The service also carries a $1,000 onetime installation charge per link.

UI releases code, APIs

continued from page 6

members get early access to UI technology but cannot release products based on the code until the technology becomes generally available.

Last week, UI did make generally available the systems management APIs that would be used by third-party developers to build applications that run on top of the Distributed Manager platform.

"We're releasing the interface specifications, so anyone can start developing applications for this," said David Sandel, UI's vice-president of marketing.

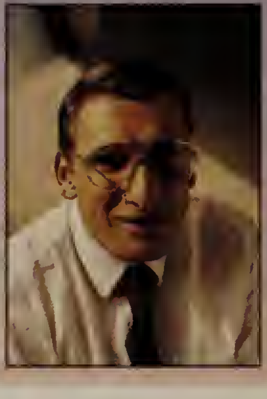
The Distributed Manager framework is based on the Common Management Information Protocol standard and the Object Management Group specification for the Object Request Broker.

Richard Bevis, group product marketing manager for open solutions software at Unix System Laboratories, Inc., said Distributed Manager was developed using a blend of licensed vendor technologies.

Tivoli Systems, Inc.'s Wizdom object technology forms the heart of the systems management framework. But several other vendor technologies are included, as well.

The Distributed Manager's user and group management technology is licensed from Pyramid Technology, Inc., and Unisys Corp. supplied the software installation and distribution technology.

"We're releasing the interface specifications, so anyone can start developing applications for [Distributed Manager]."



David Sandel
Vice-president of worldwide marketing
Unix International, Inc.

According to Bevis, USL is porting the Distributed Manager for Unix System V Release 4.0, although he offered no delivery deadline.

Firm helps IBM fulfill plan

continued from page 2

been specified when these products would be made available or what they would be called.

However, sources said New York-based Systems Strategies will announce separately that it plans to ship next year a version of its ezBridge Transact software that supports IBM's MQI interface. The ezBridge Transact software is high-level middleware that also uses message queuing to provide reliable delivery of transactions between applications running on multiple platforms.

Systems Strategies will announce an MQI version of ezBridge Transact for Digital Equipment Corp. VAX/VMS and Tandem Computers, Inc. Guardian systems, as well as Stratus Computer, Inc. and IBM System 88 machines running VLS, and IBM OS/2, VSE/CICS, RISC System/6000 and Application System/400 systems, sources said.

Also, the MQI version of ezBridge Transact will initially support LU 6.2 and eventually support DECnet and the Transmission Control Protocol/Internet Protocol, according to sources.

Filling in the blueprint

MQI is an integral part of IBM's Networking Blueprint, a strategy for supporting communications between applications within multiprotocol networks. Besides message queuing, the blueprint specifies remote procedure calls and the Common Programming Interface for Communications as methods for linking distributed applications.

With MQI, applications issue messages that are logged to recoverable queues and transferred to the target application once that application is able to process it. This provides for a high degree of reliability and efficiency when processing complex applications that involve multiple steps or transactions.

For example, processing a loan could involve updating multiple records on various systems. Message queuing allows all the steps involved in the application to be executed independently. Thus, an application can continue processing even if one step in the process cannot be executed because the target application is unavailable.

The IBM-Systems Strategies relationship is likely to give IBM a boost against DEC and other vendors that offer message queuing services. Systems Strategies' ezBridge Transact provides IBM with a robust message queuing technology that already runs on a range of platforms and networks. Systems Strategies will gain additional marketing presence by allying with IBM.

AT&T opens SS7 net for 800 routing

continued from page 1

the carrier on how to route individual calls. The computer can keep watch over multiple call centers and quickly respond to soaring call volumes or other problems.

In addition, ICP can help users improve load balancing among multiple call centers and enhance customer service by enabling agents to field calls faster.

Users with multiple call centers, including American Express Travel Related Services Company, Inc. and JCPenney Telemarketing, Inc. have pressed interexchange carriers to offer this feature.

"We plan to use ICP because it will help us manage traffic buildups as they arise, rather than us reacting [to them]," said Ralph Henderon, vice-president of network and facilities support for JCPenney Telemarketing, a Milwaukee catalog order firm. "We want to reap the benefits of treating our 14 call centers as a single [automatic call distributor] pool."

Nenad Milinkobic, network management strategist for AT&T, described ICP as "unprecedented in the telecom industry because it gives users full control of call routing in the AT&T network from their premises."

Analysts agreed. "ICP is the industry's most advanced 800-call routing feature because it enables users to establish links to AT&T's [Common Channel Signaling System 7] network," said Mark Langner, an associate with TeleChoice, Inc., a Montclair, N.J., consultancy. "And there are many users that will flock to it."

ICP can be used with a range of toll-free services, including AT&T's Megacom 800 offering, its mid-range AT&T 800 service and the low-end Readyline 800.

SS7 links to AT&T's signaling net would enable users to dynamically route calls to the first available agent at any call center. Information on routing destinations and the types of calls routed to particular sites would be developed by the customer and maintained in a device called a Customer Routing Point (CRP) at the user's site. AT&T is now certifying computers for use as CRPs.

AT&T will provide default routing options in case the CRP fails to respond with routing instructions within a specified period or upon receipt of an erroneous message.

When a caller dials a toll-free number, the switch at the originating end would hold the call while the CRP is queried over the SS7 network. The CRP would check control information that it continually receives from ACDs in the user network and determine where to route the call. It would then send that telephone number to the originating switch, which would establish the connection.

AT&T will assess usage charges on a per-call-attempt basis. Customers making one to 75,000 calls will be billed at five cents a call, 750,001 to 1,500,000 calls at 4½ cents a call and 1,500,001 to 2,250,000 calls at four cents a call. Those making 2,250,001 to 3,000,000 calls will be billed at 3½ cents per call and 3,000,001 calls or above at three cents a call.

ICP carries a $4,000 monthly service charge per SS7 Network Control Point pair. AT&T will assess ICP users a onetime $5,000 installation charge per location and a $50 change charge.

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161 Worcester Road
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(508) 875-6400

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Firms team up for FDDI trial

continued from page 2

Packard Co., National Semiconductor Corp., NSC/Vitalink, Proteon, Inc., 3Com Corp., Wandel & Goltermann Technologies, Inc. and Wellfleet Communications, Inc.

Tolly said users have little or no data to help cost-justify the move to FDDI.

"Testing of FDDI today focuses mostly on speed, but what network managers are really concerned with is the bottom line," Tolly said. "They want to know if FDDI will help them improve existing applications, and if so, will there be network management hell to pay? Will their token-ring and Ethernet technicians be able to move to it quickly, or are they going to have a horrendous learning curve? Those are the type of questions we will answer."

Many observers say ATM will obviate the need for FDDI, but Tolly said it isn't that simple.

"ATM, like all new technologies, is erroneously viewed as the panacea that will cure all network ills. Both technologies will have their place, and neither will preclude the other," he said.

Tolly said up to three vendors from each technology area — from network adapters, bridge/routers and intelligent hubs to Systems Network Architecture gateways, Synchronous Data Link Control converters, network analyzers and superservers — have been invited to submit gear. Some slots are still open and will be filled on a first-come, first-served basis, he said.

In the test network, FDDI will be used as a campus backbone linking token-ring and Ethernet local-area networks, and carrying traffic for superserver, SQL and next-generation image applications.

Tolly said he will be chronicling the issues that arise throughout the entire process, the results of which will be released in a white paper, or series of white papers, sometime near INTEROP 93 Spring next March.

Michael Diamant, manager of hardware and communications engineering at the Martin Marrieta Electronic Information and Missiles Group in Orlando, Fla., applauded the testing plan.

"Impartial test results will be valuable not only to let users see the benefits and drawbacks of FDDI, but also to see if true interoperability exists among the different vendors' gear," he said. ☐

IBM to widen net portfolio

continued from page 1

ing systems. The software enables a machine configured as an APPN End Node to automatically find primary and backup Network Nodes when the machine is brought onto an APPN net.

Today, users must program an End Node's logical unit name and communications paths to the nearest Network Nodes, said Steve Joyce, an advisory programmer with IBM's APPC Market Enablement Group.

The Discovery Architecture eliminates that second step and enables an End Node to automatically find a backup Network Node as needed.

Joyce said IBM will initially make Discovery code available as an add-on piece of code, but ultimately would include it in all of its operating systems.

"The Discovery Architecture puts APPN up there as being a real plug-and-play scheme," said Anura Guruge, an independent consultant based in New Ipswich, N.H.

IBM is also working on a new 3270 emulation software package for OS/2 and AIX workstations. The product, dubbed APPC 3270, runs on workstations emulating 3270 terminals and encapsulates 3270 data in APPC protocols for transportation across an LU 6.2-based net. Personal computers emulating 3270s cannot utilize LU 6.2 transports for 3270 data today, Joyce said.

The APPC 3270 program will be offered in addition to IBM's Distributed Logical Unit Server/Requester (DLS/DLR) feature for PCs and terminals linked to 3174 controllers. That feature will reside in the 3174 and encapsulate 3270 data in LU 6.2 for routing over the APPN net.

"If the user wants full-blown, color [screens] and great graphics, then DLS/DLR is the answer," Joyce said. "If they want something quick and dirty that gets you 3270 sessions over LU 6.2, then they should look at APPC 3270."

Analysts said APPC 3270 is not a technical blockbuster, but one way IBM is migrating 3270 users to the LU 6.2 world. "One of users' main concerns is losing their 3270 functionality," said Frank Dzubeck, president of the Communications Network Architects, Inc. consultancy in Washington, D.C. "IBM is telling them they don't have to worry about that anymore."

IBM will also be bringing out its first LU 6.2 file-transfer program, Joyce said. The unnamed product will let users transfer files between PCs or between PCs and the mainframe over LU 6.2.

The file-transfer program fills in one of APPC's biggest gaps, said Dick Boyle, program director for local-area communications at the Gartner Group, Inc. consultancy in Stamford, Conn.

Joyce said the APPC products will be announced in the spring. Pricing is not available. ☐

> "The Discovery Architecture puts APPN up there as being a real plug-and-play scheme."

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3Com's new hub is also a hub, a

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T-1 speeds, DDS unveiled

continued from page 4

seconds per day when there are no bit errors on a circuit. Service availability objectives refer to the percentage of time a circuit is functioning at full capability during the course of a three-month period.

If these objectives are not met, the carrier will issue credits to the user.

AT&T gave examples of its quality objectives for circuits 250 to 1,000 miles in length. The figures may vary for shorter and longer links.

Performance objective

The performance objective for any of the new ASDS speeds is nine errored seconds a day (which translates into 99.99% error-free seconds a day), four severely errored seconds a day and a 99.96% availability a year. A severely errored second is one in which there are more than 10 errors.

The performance objective for 64K bit/sec DS0 links is eight errored seconds a day, up from 30. This translates to better than 99.99% error-free seconds a day, up from 99.97%.

There is also a new maximum of four severely errored seconds a day, up from 25, and 99.98% annual availability, up from the current 99.94%.

> The performance objective for 64K bit/sec DS0 links is eight errored seconds a day, up from 30.
>
> ▲▲▲

The performance objective for DDS is seven errored seconds a day, up from 30, which is better than 99.99% error-free seconds a day, up from 99.97%. Another new objective is four severely errored seconds a day, up from 25, and 99.99% annual availability, an improvement over the existing 99.95% objective. ☒

3Com to roll out E-net hub

continued from page 2

work System and Apple Computer, Inc. AppleTalk II.

The Spanning Tree Algorithm and source routing transparent bridging protocols are also expected to be supported as are the Routing Information Protocol and Open Shortest Path First routing protocols.

Like 3Com's other products, Boundary Node hubs can be managed via any Simple Network Management Protocol-based management system.

"This router-in-a-work-group hub is a hot area and a natural for 3Com," said Michael Howard, president of Infonetics Research, Inc., a market research firm in San Jose, Calif. "Users are eating up low-cost routing functions in the hub."

In addition to the routing features, Boundary Node is expected to offer SDLC conversion capabilities in conjunction with the release of a token-ring version of the hub sometime next year. 3Com will work with Sync Research, Inc. for that technology, and the companies will formally seal a strategic alliance by the end of the month.

In order to interconnect SNA environments with local-area networks, users must convert SDLC traffic coming off the SNA network into 802.2 Logical Link Control 2 traffic so it can be sent across a multiprotocol internet.

"Since about 90% of nonmanufacturing remote office sites are SNA environments, SDLC conversion will ultimately become a main requirement for this type of product," said Todd Dagres, director of data communications research and consulting at The Yankee Group, a consultancy in Boston. "The key for vendors like 3Com is providing the class of service users require, which in this case means SNA gateways and converters."

> "This router-in-a-work-group hub is a hot area and a natural for 3Com."
>
> ▲▲▲

A 3Com spokeswoman declined comment. ☒

Study finds users vulnerable

continued from page 6

result is troubling when coupled with the fact that almost 40% of employees in large U.S. corporations work on LANs, the survey stated.

"Protecting the data center is not sufficient because we know that computing power is now migrating away from data centers and toward distributed systems and PC LANs, where preparedness is at a minimum," said Doug Cogswell, executive vice-president of CDRS.

How others rated

On average, financial services firms are best prepared for disaster, registering a comparatively low vulnerability index of 22 for data centers and 52 for LANs. In contrast, services firms registered an index of 56 for data centers and 76 for LANs. The industry with the greatest LAN vulnerability, however, is wholesale/retail, which garnered a score of 83.

To obtain a CDRS Vulnerability Index questionnaire and an analysis of your company's vulnerability, contact CDRS at (708) 518-5689. ☒

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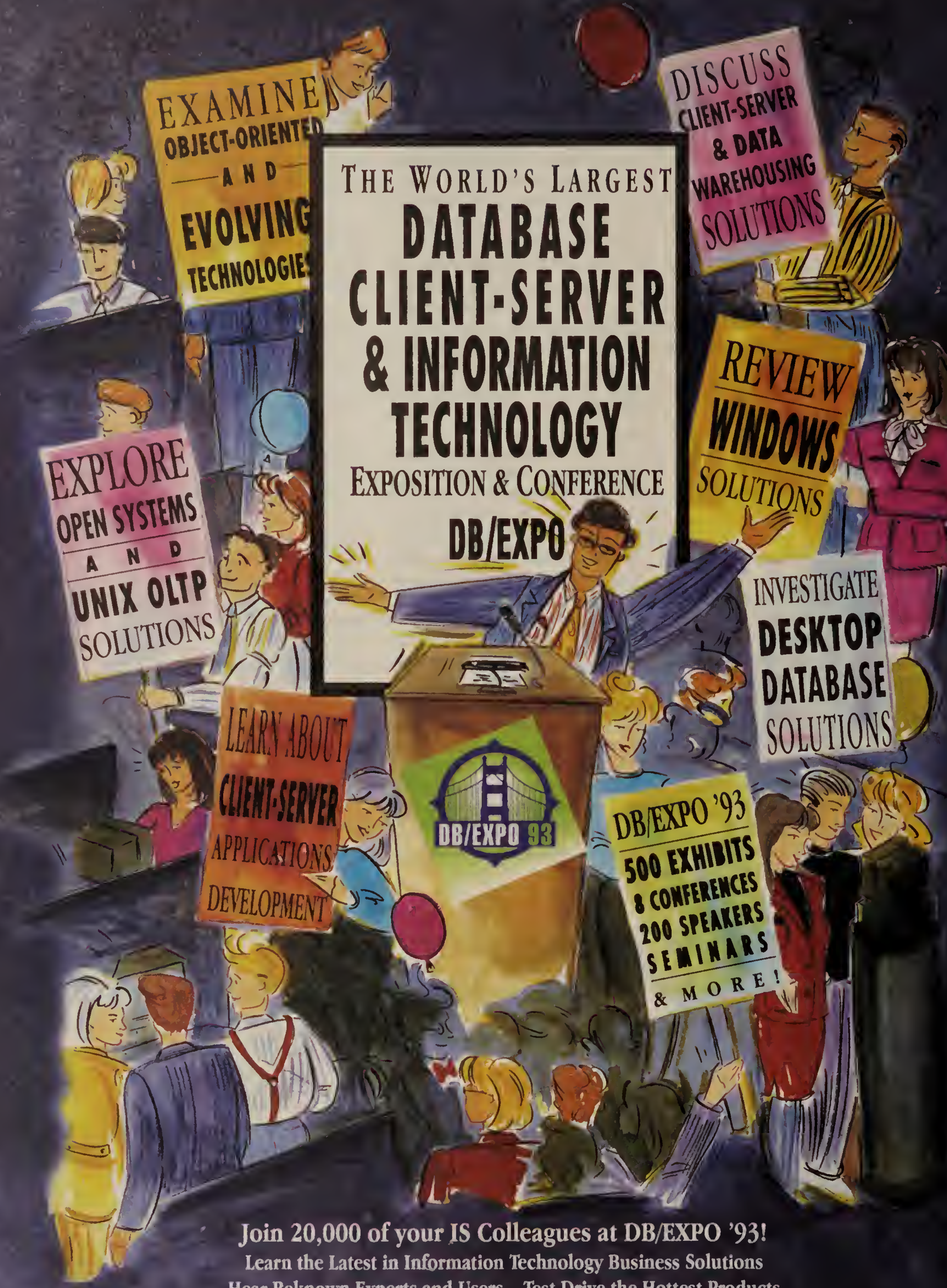

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Network Innovators

Jeff Case

A pragmatist at heart, when Case thinks about SNMP, he knows 'that dog will hunt.'

By Paulina Borsook

It makes sense that Jeff Case, one of the four original authors of the Simple Network Management Protocol, planned to be a high-school electricity and electronics shop teacher.

Case, president of SNMP Research, Inc. in Knoxville, Tenn., says he "focuses on pragmatics" and that he helped create SNMP because he "wanted to survive" as the person responsible for networking at the University of Tennessee at Knoxville.

There was absolutely nothing someone could use to manage the university's Transmission Control Protocol/Internet Protocol-based network back in 1986, so one of the earliest implementations of SNMP was developed by Case and one his graduate students, Ken Key, as his master's thesis.

Long-time Internet insider, consultant Dave Crocker, says Case's "categorical, absolute, total pragmatism" may account for SNMP's success. Crocker says Case broke into the Internet's technical inner circle after making just one presentation at a time when the Internet was relatively closed.

"His unique presentation style integrates consistency and thoroughness, and you believe him," Crocker says. "He's thorough, direct and acknowledges what he doesn't know. Jeff is able to brighten up typical boring stuff so it goes down easily."

Crocker adds, "No one today is coming out with an internetworking product without SNMP — or the announced intention to develop it. And SNMP is being used more and more outside of TCP/IP." The initial SNMP implementation was developed to manage the TCP/IP protocol suite.

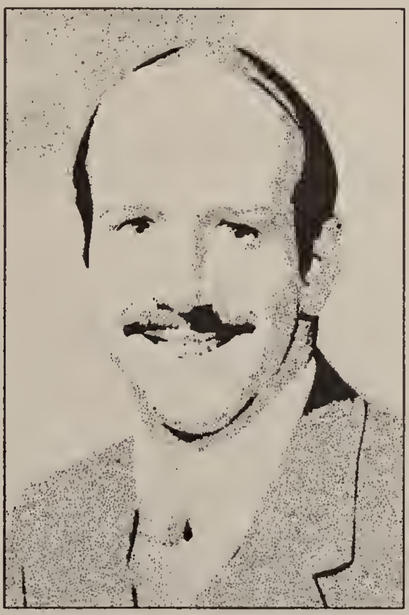
Case, who is Martin Marietta Professor of Computer Science at the University of Tennessee, says he is "totally blown away by how successful SNMP has been. We wrote a protocol to solve our own problems, and it turns out a lot of other folks have the same problems."

> **SNMP's acceptance may also have had something to do with what Crocker calls Case's unique presentation style.**

Born in Indianapolis in 1952, Case is no scholarly slouch; he holds an A.A., B.A. and M.S. in electrical engineering technology from Purdue University and a B.A., M.A. and Ph.D. in education from the University of Illinois.

Perhaps because of his background in education, Case is what standards-expert Marshall Rose, president of Dover Beach Consulting in Mountain View, Calif., calls "a unanimous success as an educator, both at the university and professional level."

After he finished his schooling, Case rose through the ranks at Purdue from teacher's aide to instructor to assistant professor to associate professor, ending up as the director of the university's academic computer user consulting service. He took charge of integrating computing into coursework throughout the university.



Case left to take a job with the University of Tennessee on the day the school won the Sugar Bowl in 1986. He was hired as an associate professor and as the chief engineer of the school's computer center, where he spent three-quarters of his time as manager of the center and the rest as a teaching member of the computer science faculty. In particular, he was hired to help migrate the school's terminal-based networks into an integrated local-area network/wide-area network internetwork, still an ongoing process. He soon became the associate director of the university's computer center.

It was at the university that Case converted from being a supporter of Digital Equipment Corp.'s DECnet, which was typical of academics involved in computing at the time, to being a champion of TCP/IP. At the time, the National Science Foundation (NSF) was providing free network connection to the then largely research-based Internet. Case says this free connection is what brought him to the TCP/IP camp.

The idea for SNMP arose when staffers at two regional academic subnets of the Internet — the New York State Educational Research Network and the Southern University Area Network, which the University of Tennessee was a part of — complained to Proteon, Inc., then supplier of routing gateways on the Internet, about the lack of network management capabilities.

Over a March 1987 dinner at the Doubletree Inn in Monterey, Calif., during the first INTEROP trade show, almost as a dare, Proteon management agreed to come up with a network management agent. But in return, Proteon wanted the three complaining network users — Mark Fedor, then engineer at the Cornell Supercomputer Theory Center and now software engineer at Performance Systems, Inc., (PSI), a Reston, Va.-based Internet service provider; Marty Shoffstall, then research assistant at Rensselaer Polytechnic Institute and now vice-president and chief technical officer at PSI; and Case — would develop the management portion of the needed software. SNMP came about as a result of that dinner and was ready for demonstration at INTEROP 88 Fall.

Case founded his current company, SNMP Research, in 1988, when IBM wanted to purchase the network management software. One of the three main suppliers of commercial SNMP implementations in the world was for years only a post office box and a name. Case acquired these corporate trappings because IBM needed to be able to buy from a corporation.

Part of SNMP's ready acceptance by the Internet community revolves around what Crocker says is SNMP's strength: its simplicity. "The Internet community respected Jeff's emphasis on simplicity and pragmatism," he says. "SNMP didn't talk about things; it just did them."

SNMP's acceptance may also have had something to do with what Crocker calls Case's unique presentation style. According to Rose, Case is "technically very good yet has a down-home homespun understatement for every situation." Crocker adds that Case is famous for saying "that dog will hunt," a phrase meaning something will work.

Crocker also believes SNMP's genius lies "in forcing people to think about the important part of managing a network: the application and what to do with management information."

Case says, "Every year since 1989, we've thought that the SNMP market would be totally saturated. But it keeps growing because, with SNMP, end users for the first time can have open management of multivendor systems."

To this end, Case has assembled a consortium of eight development partners to work on an application program interface called Enhanced Management Agent Through Extensions (EMANATE). EMANATE defines how a master SNMP agent can communicate with multiple subagents on the same device, easing the management of workstations and other devices from multiple vendors. Products conforming to EMANATE were demonstrated at INTEROP 92 Fall and are now shipping.

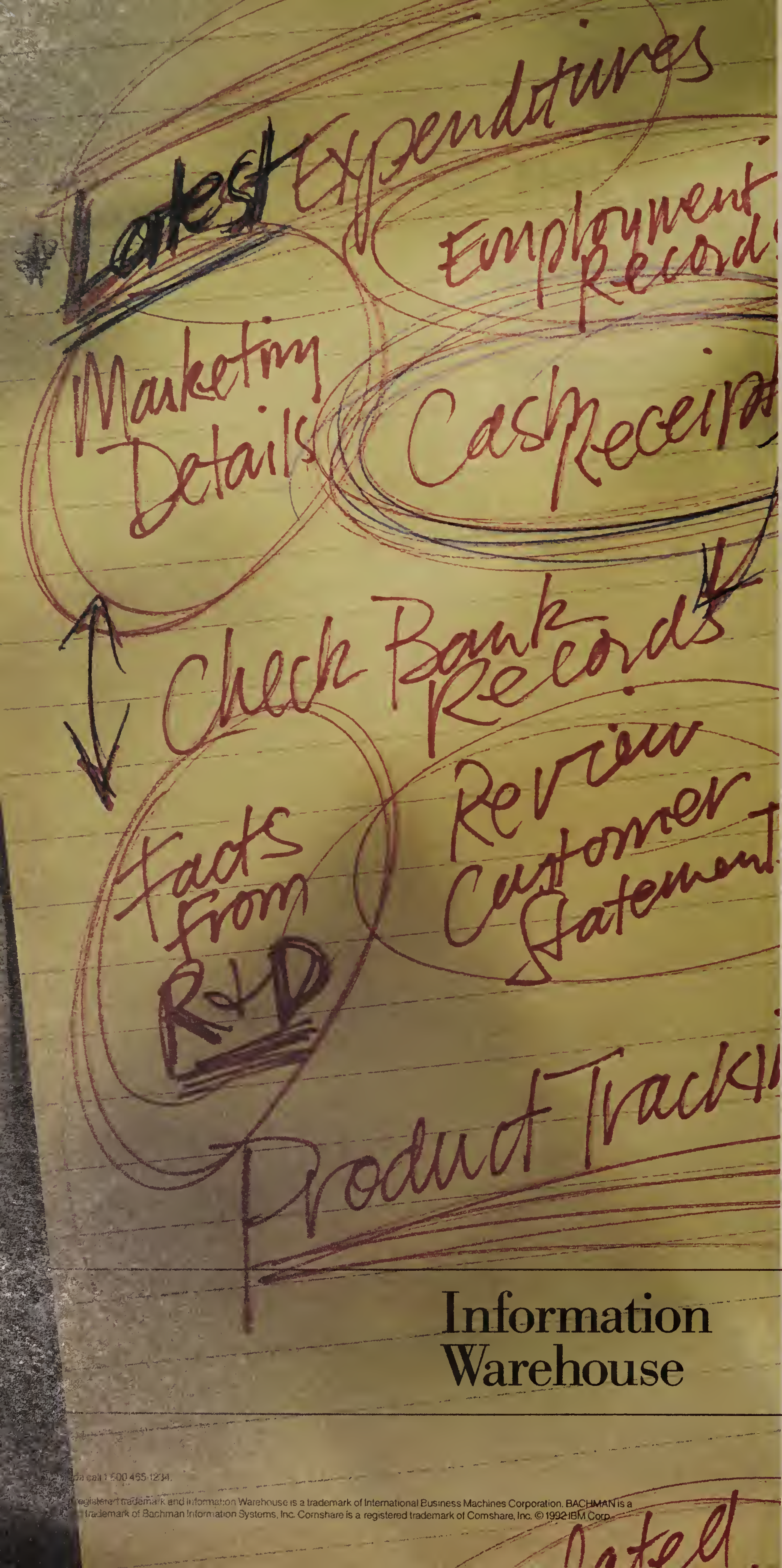
As for improvements to SNMP, SNMP Version 2, which is being called the Simple Management Protocol, was proposed to the Internet Engineering Task Force (IETF) this past summer. The new version includes security features found in Secure SNMP, which was recently added to the initial version of SNMP.

Case says it was problematic getting security features approved by the standards committee for the first SNMP version.

"So we implemented trivial security features in SNMP, while more robust approaches to security could be developed and agreed upon," he says. "But the IETF always insisted that SNMP would have to evolve and invited proposals for the creation of SNMP Version 2." Version 2 encompasses the security features of Secure SNMP, so Case advises network users not to bother with Secure SNMP but to make a smooth transition to SNMP Version 2.

Case, his wife and two daughters live on a 75-acre farm along with 40 holstein cows, two dogs and 18 cats. To get away from the burdens of being what Rose calls "Dr. SNMP," Case takes to riding his tractor or overhauling his dump truck for relaxation. The advocate of what may be the world's most practical network management standard never ceases from pragmatism.

Borsook is a free-lance writer based in Charleston, S.C., and can be reached via the Internet at loris-@well.sf.ca.us.



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